News of the Industry Begins Page 243

AUTOMOTIVE INDUSTRIES

LAND AIR WATER

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The AUTOMOBILE

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THIS ·· THE STEEL AGE

THE graceful arch of a bridge fades into the mists of the far shore. A mammoth building climbs upward . . . forty, fifty, sixty, eighty-five floors. The streets are a mad rush of motor traffic. Under the streets hundreds of trains rocket through an intricate maze of tracks and tubes. All about is the clatter and hum of machinery—the incredible machinery of mass production. The air vibrates with the drone of an aeroplane.

It is the age of Steel. It is Steel that forms the gigantic span of the Kill van Kull Bridge. It is Steel that carries the Empire State Building to the tip of the 200′ mooring mast atop its eighty-five floors. It is Steel that builds the automobile—that bores roadways beneath the earth's surface. The machine is made of Steel and uses Steel as its fodder.

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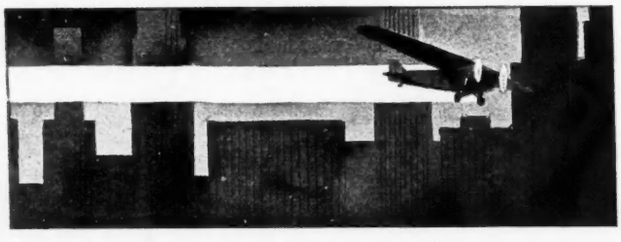

CARNEGIE STEEL

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CARNEGIE STEEL COMPANY, PITTSBURGH, PA. - *Subsidiary of* UNITED STATES STEEL CORPORATION

AUTOMOTIVE INDUSTRIES

VOLUME 64 FEBRUARY 14, 1931 NUMBER 7

1930 New Car Sales Dropped 18% Under 3-Year Average

New car registrations exceed normal by 22% during first four months of past year

by Marcus Ainsworth

TOTAL 1930 motor vehicle registrations in the United States showed a modest gain of about one-third of 1 per cent, as compared with the 1929 figure, a compilation just completed by *Motor World Wholesale* indicates. During the past year, new car sales dropped 32 per cent from the 1929 record.

Motor vehicle registrations in 1930 showed a gain of 4.58 per cent in Zone IV, however. This area is comprised of Ohio, Indiana, Illinois, Michigan and Wisconsin. Zone I (the six New England States) showed the second largest gain, an increase of 2.21 per cent over the 1929 figure. In New York, Pennsylvania and New Jersey (Zone II) the 1930 increase in registrations was 1.45 per cent over the previous year.

The South Atlantic group—where crop prices, drought and intense business depression have serious effects—showed a loss of 3.55 per cent in total motor vehicle registrations, as compared with the previous year. The eight Mountain States (Zone VIII) showed a drop of 1.53 per cent and the Pacific Coast group of three states showed a decrease of 0.12 per cent in total registrations.

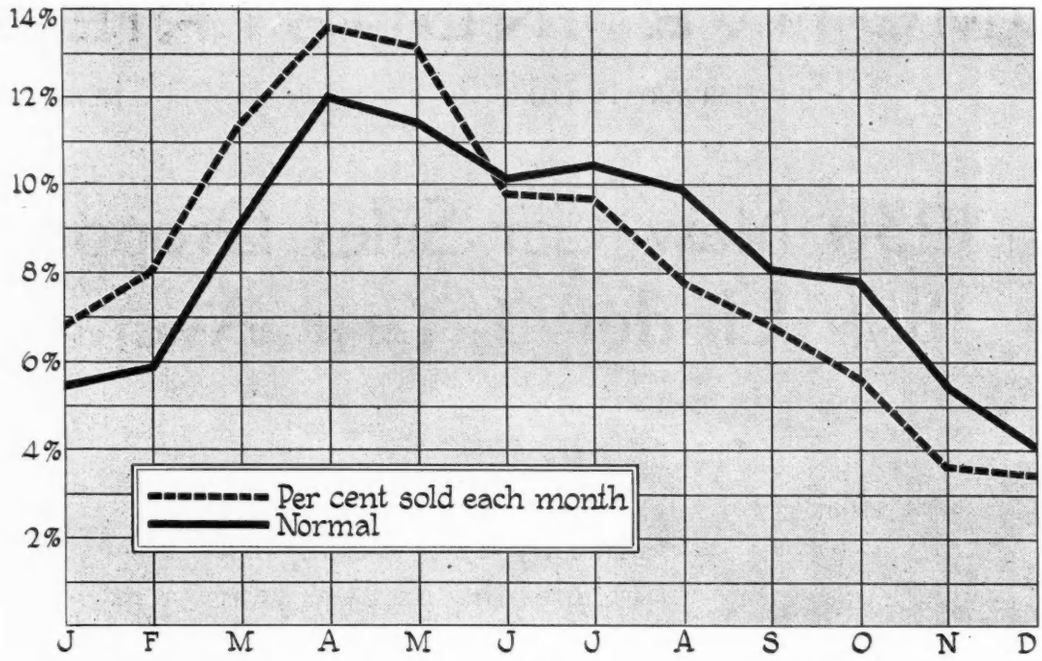
The 32 per cent drop in new car sales brought the 1930 figure of 2,718,000 down to approximately the 1927 total of 2,715,000 units. Retail car sales were only 18 per cent less than the average sales per year for the three-year period of 1927, 1928 and 1929, however.

Retail car sales per dealer in 1930 ranged from an average of 26 per dealer in Zone VIII, the Mountain States group, to 72 per dealer in Zone IX, the three Pacific Coast States.

The accompanying chart shows that during the first four months of 1930, percentages of new cars sold each month were actually greater than they were for the normal car sales by months. This normal is the average of sales by months for the preceding four years. The downward trend, however, began in May, 1930, reached proportions of abruptness in June, and was not checked until November.

1930 Motor Vehicle Registrations

State	Passenger Cars	Total
Alabama	238,255	277,728
Arizona	97,951	110,464
Arkansas	193,000	231,300
California	1,750,000	1,980,000
Colorado	274,821	304,913
Connecticut	298,226	347,268
Delaware	45,520	56,043
Dist. of Col.	153,417	168,752
Florida	274,500	327,000
Georgia	294,768	341,497
Idaho	104,600	120,446
Illinois	1,431,000	1,655,800
Indiana	745,000	874,015
Iowa	705,989	778,530
Kansas	511,180	594,149
Kentucky	300,000	335,000
Louisiana	235,000	282,000
Maine	149,000	182,600
Maryland	283,871	321,759
Massachusetts	745,064	852,122
Michigan	1,170,000	1,339,000
Minnesota	618,853	727,860
Mississippi	225,000	257,000
Missouri	671,000	763,000
Montana	109,450	135,050
Nebraska	365,000	421,200
Nevada	23,000	29,100
New Hampshire	93,386	112,000
New Jersey	709,504	847,881
New Mexico	76,000	79,000
New York	1,922,658	2,319,695
North Carolina	412,957	474,167
North Dakota	155,000	183,000
Ohio	1,585,423	1,798,666
Oklahoma	506,000	566,400
Oregon	234,346	259,860
Pennsylvania	1,542,466	1,793,100
Rhode Island	115,265	135,974
South Carolina	191,758	218,406
South Dakota	178,682	202,978
Tennessee	329,183	369,403
Texas	1,174,760	1,381,126
Utah	96,300	114,165
Vermont	78,200	86,599
Virginia	317,086	378,220
Washington	388,813	452,604
West Virginia	222,100	260,467
Wisconsin	681,003	791,509
Wyoming	51,750	61,700
Total	23,076,105	26,700,516



After five months of sales below normal a decided turn came in November toward normal + + +

Approximately 53 per cent of the year's car sales were made in the first five months of 1930. Normally, during the previous four years, about 44 per cent would have been sold during this period.

This probably explains the relative better business enjoyed by wholesalers during the first quarter of 1930, not necessarily because of the actual volume of new car sales, but because of the better income and moral effects on retailers of this business in the early months of the year. The less-than-normal sales of new vehicles during the last half of the year, by the same token, might account for the shrinkage of wholesale sales during this period.

Registrations by Zones

ZONES*	Motor Vehicle Registrations to Dec. 31, 1930	Motor Vehicle Registrations to Dec. 31, 1929	Passenger Car Registrations to Dec. 31, 1930	Passenger Car Registrations to Dec. 31, 1929	Per Cent Motor Vehicles Registered by Zones 1930	Per Cent Motor Vehicles Registered by Zones 1929	Per Cent Change in Motor Vehicle Registrations Dec., 1930, over Dec., 1929
I. New England	1,716,563	1,679,419	1,479,141	1,446,746	6.41	6.32	+2.21
II. Middle Atlantic	4,960,676	4,880,573	4,174,628	4,091,433	18.59	18.35	+1.45
III. South Atlantic	2,546,311	2,640,164	2,195,977	2,283,948	9.54	9.93	−3.55
IV. E. N. Central	6,458,990	6,429,567	5,612,426	5,614,055	24.20	24.16	+4.58
V. W. N. Central	3,670,717	3,646,410	3,205,704	3,229,254	13.75	13.82	+0.66
VI. E. S. Central	1,239,131	1,228,629	1,092,438	1,089,346	4.64	4.52	+0.85
VII. W. S. Central	2,460,826	2,437,273	2,108,760	2,103,563	9.22	9.14	+0.98
VIII. Mountain	954,838	969,736	833,872	853,190	3.57	3.64	−1.53
IX. Pacific	2,692,464	2,695,891	2,373,159	2,377,918	10.08	10.12	+0.12
United States	26,700,516	26,607,662	23,076,105	23,089,453	100%	100%	+0.34

Sales by Zones

Zones*	Passenger Car Sales by Zones 1930	Passenger Car Sales by Zones 1929	Per Cent Passenger Car Sales by Zones 1930	Per Cent New Car Sales in 1930 to Replace Those Scrapped or Unregistered in 1930	Number of Car Dealers	Per Cent Car Dealers by Zones	Retail Car Sales Per Dealer in 1930	Passenger Car Registrations Per Dealer	Number of Service Stations or Repair Shops	Per Cent of Service Stations by Zones	Motor Vehicle Registrations Per Service Station	Number of Accessory Outlets	Per Cent Accessory Outlets by Zones
I.	207,168	269,414	7.65	84	3,045	6.25	68	485	6,691	6.53	256	3,872	4.83
II.	585,202	748,248	21.61	85	8,603	17.71	68	485	19,036	18.56	260	13,104	16.40
III.	252,858	364,837	9.34	134	4,268	8.76	59	514	9,512	9.27	267	7,486	9.36
IV.	620,950	1,015,084	22.93	100	11,545	23.65	54	486	22,975	22.40	281	19,328	24.16
V.	359,902	521,988	13.29	106	9,305	19.15	39	344	16,182	15.77	226	12,583	15.72
VI.	122,408	206,157	4.52	97	2,284	4.70	54	478	4,645	4.53	266	3,990	4.98
VII.	225,060	392,116	8.31	97	3,791	7.80	59	556	8,595	8.38	286	6,697	8.37
VIII.	86,401	141,578	3.19	122	2,381	4.90	36	350	4,459	4.35	214	3,972	4.98
IX.	248,055	356,634	9.16	101	3,436	7.08	72	690	10,461	10.21	257	8,948	11.20
	2,708,000	4,016,056	100%	100%	48,658	100%	55	474	102,556	100%	260	79,980	100%

*Zone I: Me., N. H., Vt., Mass., R. I., Conn. Zone II: N. Y., N. J., Pa. Zone III: Del., Md., D. C., Va., N. C., S. C., Ga., Fla., W. Va. Zone IV: Ohio, Ind., Ill., Mich., Wis. Zone V: Minn., Mo., Iowa, N. D., S. D., Neb., Kan. Zone VI: Ky., Tenn., Ala., Miss. Zone VII: Ark., La., Okla., Texas. Zone VIII: Mont., Idaho, Wyo., Colo., N. M., Ariz., Utah, Nev. Zone IX: Wash., Ore., Calif.

U. S. Finds Most Characteristics of Premium and Other Gasolines Similar

Drop of 31 degrees in initial point of fuel during the past 10 years may explain the present prevalence of vapor-lock in motor vehicle and airplane powerplants, Bureau of Mines finds after exhaustive study

Vapor pressures of 15 samples equaled 9 lb. per sq. in. or more, with 33 samples below 6 lb. per sq. in. and an average a little over 7 lb. per sq. in.

A PRELIMINARY report on the results of the twenty-second semi-annual motor-fuels survey has been published by the United States Bureau of Mines (Reports of Investigations No. 3063). For the first time motor fuels have been divided into competitive-price gasoline and premium-price motor fuels. Competitive-price gasolines include all those motor fuels that are sold at and below the generally recognized base price, all others being included under the head premium-price gasoline.

In addition to the customary analyses, data in the report referred to include results from the Reid vapor-pressure test and the temperatures at which 10 per cent of the charge was evaporated in the distillation. In order to make the determination before the samples had undergone appreciable changes, the vapor-pressure determination was the first to be made. The vapor pressure of a motor fuel as determined by the Reid method is related to the readiness with which the fuel will start to ignite in the engine, and to the tendency to "vapor-lock" or form gas bubbles in the fuel-feed lines of the automobile, which prevent the flow of fuel from the tank to the carburetor.

Only 15 samples or 5 per cent of the total number (298) had vapor pressures of 9.0 lb. per sq. in. or higher; the highest vapor pressure found was 10.0 lb. for sample 263, a premium-price fuel from Chicago. Two hundred and fifty-one samples or 84 per cent had vapor-pressures between 6.0 and 8.9 lb. p. sq. in. Thirty-three samples or 11 per cent had vapor pressures below 6.0 lb. p. sq. in.

The second determination that was made on each sample was the distillation test, in which the temperature at which 10 per cent of the gasoline is evaporated in the distillation was specially determined. The temperatures at which 10 per cent of the gasoline is evaporated varies from 118 deg. Fahr. for sample No. 331, a premium-price fuel from Omaha, to 163 deg. Fahr. for fuel No. 350, a competitive-price gasoline from Tulsa.

In so far as the gravity, vapor pressure and distillation data are concerned, the grouping of samples into "competitive-price gasolines" and "premium-price motor fuels" does not seem to disclose any striking differences between the two groups, each considered as a whole. The average gravity of both groups is the same. The vapor pressures are about the same in each class with an average of 7.2 lb. p. sq. in. for the competitive-price gasoline and 7.0 lb. for the premium-price fuels. The temperature at which 10 per cent was evaporated is about the same for both classes. The vapor pressure of the premium-price fuel with the low 10 per cent evaporated temperature was 9.0 lb., and for the competitive-price fuel with the high 10 per cent temperature the vapor pressure was 5.9 lb. The premium-price fuels are somewhat more volatile than the competitive-price samples, but whether this is a point of superiority or not may be debatable.

The distillation test results, averaged, were as follows: First drop, 99 deg.; 10 per cent, 149 deg.; 20 per cent, 182 deg.; 50 per cent, 260 deg.; 90 per cent, 366 deg.; end point, 403 deg.

In ten years the initial point (first drop) has fallen from 130 to 99 deg. (this may explain why there are complaints about vapor lock at present, when there were practically none up to a few years ago); the 50 per cent point has dropped from 268 to 260 deg., while the end point has dropped from 446 to 403 deg.

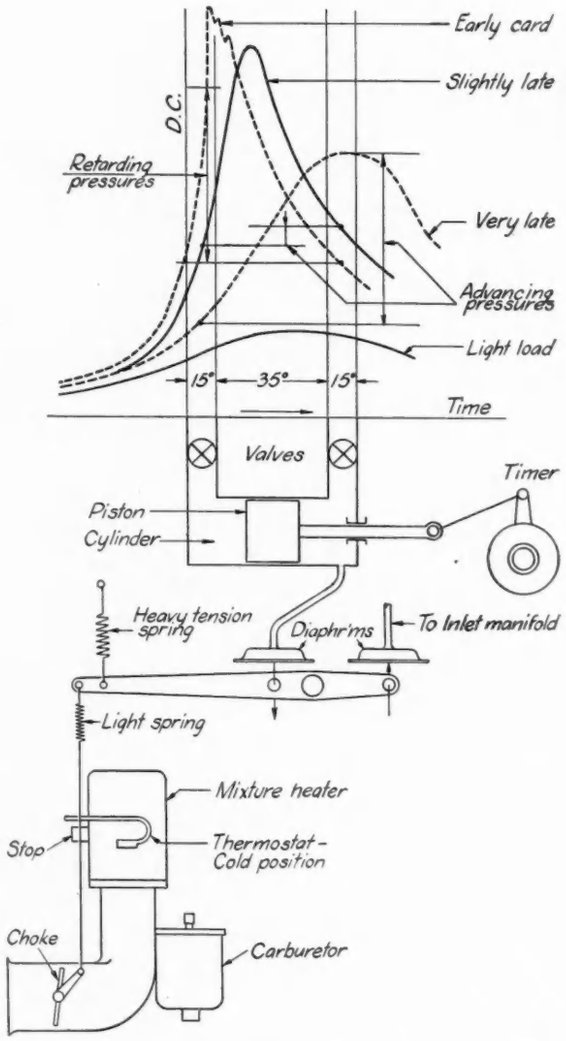


Fig. 1—Schematic drawing of Stanton ignition and carburetor control + +

Spark Timing Control

New system is designed to compensate for all of the factors which delay the rise in gaseous pressure

A NEW method of spark control, as well as a related method of throttle and choke control, has been worked out by Warren F. Stanton of Pawtucket, R. I. Mr. Stanton employs the pressures occurring in the engine cylinder—one cylinder of a multiple-cylinder engine—to effect the control.

It has been the general theory that the proper timing of the spark depends mainly upon engine speed. However, research work—some of which has been recorded in these pages—has shown that other factors in engine operation, such as mixture conditions, torque load, local temperature conditions, etc., also have an effect on the best spark timing.

The device employed by Mr. Stanton is somewhat related to the so-called "point-by-point" engine indicator, in that it places opposite ends of a control cylinder in communication with the engine cylinder at different points of the power stroke, during each cycle. Referring to Fig. 1, one end of the control cylinder is placed in communication with the engine cylinder a few degrees after dead center on every explosion stroke, so that the pressure in that end of the control cylinder corresponds to the pressure in the power cylinder at this point of the cycle. Similarly, the other end of the control cylinder is placed in communication with the engine cylinder about 50 deg. past top dead center on the power stroke, and the pressure in this end of the control cylinder therefore corresponds to the pressure in the power cylinder 50 deg. from the beginning of the power stroke. Communication between the engine cylinder and the two ends of the control cylinder is established by means of small poppet valves which are opened by cams on the shaft driving the ignition unit, which, of course, is a half-time shaft.

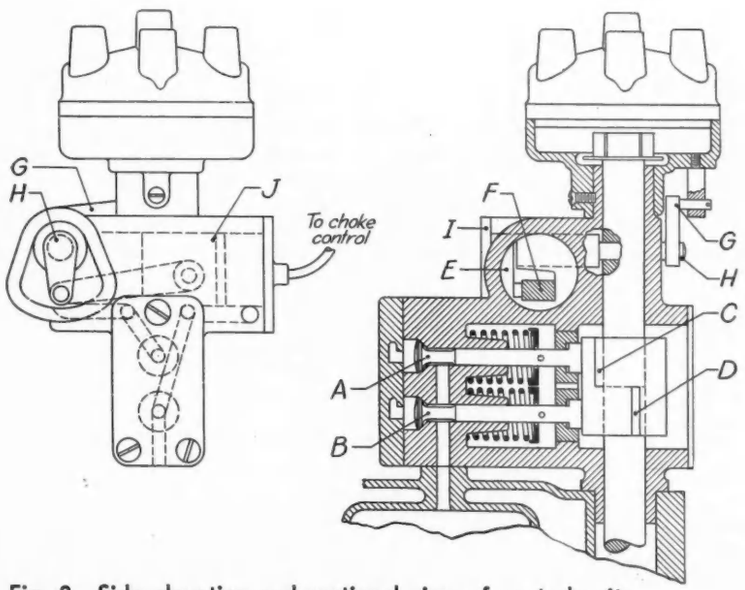


Fig. 2—Side elevation and sectional view of control unit

Actuated by Pressure in Engine Cylinder

by
P. M. Heldt

It is Mr. Stanton's contention that what determines the proper timing of the spark, above everything else, is the point of the cycle at which the cylinder pressure reaches its maximum value. If peak pressure is attained in the power cylinder too early in the cycle, the pressure in that end of the control cylinder which communicates with the power cylinder during the beginning of the power stroke will increase, while the pressure in the opposite end of the control cylinder will decrease. Within the control cylinder there is a piston, fitted with a clearance of 0.002 to 0.005 in. This piston, which is connected by suitable linkage with the arm of the ignition timer, is acted upon by the pressures in opposite ends of the control cylinder.

Should the peak pressure in the engine cylinder occur too early during the power stroke—which would indicate too great an advance of the spark—the piston in the control cylinder is forced away from that end which communicates with the power cylinder early in the power stroke, thus retarding the spark, while if it occurs too late in the power stroke or too far from the top dead center position, the control piston is moved in the opposite direction, so that the spark is advanced. A diagram of the hook-up for automatic spark control is shown in Fig. 2. *A* and *B* are the poppet valves, which have a stem diameter of 3/16 in. and are lifted 0.01 in. from their seats by cams *D* and *E*, set 25 deg. apart, through the intermediary of T-shaped lifters. Crank arm *E* is attached to rock shaft *H* which is sealed against leakage by a shoulder on it. A link *G* connects the distributor head to the shaft *H*, and *I* is a cover over the opening in the housing. *J* is the control piston. A certain amount of slack is allowed in the connection between the control piston and the timer, so as to prevent oscillation of the latter, and we are informed that inspection with a neon synchronized flashlight fails to show any hunting of the timer.

The objection might be raised that, owing to faulty distribution or other defects, conditions in the one cylinder to which the control device is connected might not be representative of conditions in the engine generally. Forestalling this, Mr. Stanton points out that while in the more expensive installations the control cylinder might be connected to two engine cylinders, he has found it sufficient to connect the valves with a single cylinder. Should there be a miss in the cylinder to which the valve is connected, the spark will be fully retarded. Other defects, such as leaky engine valves, are said not to affect the spark timing appreciably above 15 m.p.h. There has been no trouble from clogging of the passages from the engine cylinder to the control valves, and considerable leakage of the stored gases under pressure is said not to cause excessive errors in the control. Accuracy is required at three points of the mechanism only. The rock shaft *H* and its shoulder must be a good fit, and the two valve stems must fit their guides closely.

Among the advantages claimed for this method of timing the spark automatically are that it increases engine power, reduces fuel consumption, lessens trouble from "pinging" and lessens the frequency of need for decarbonizing. With a very rich mixture, which is slow burning, the spark will be advanced more than with a normal mixture.

Fig. 3 shows results obtained on a six-cylinder engine of 3½-in. bore by 5-in. stroke, with a compression ratio of 5 to 1, according to Mr. Stanton. The lowermost curve shows the spark control which was found necessary by the factory engineers in mountain work on a hot day. The next curve was obtained in the dynamometer room when the barometric pressure was rather low and the temperature 70 to 80 deg. Fahr. The next curve, which is an almost horizontal line, is that produced by the automatic control when using the

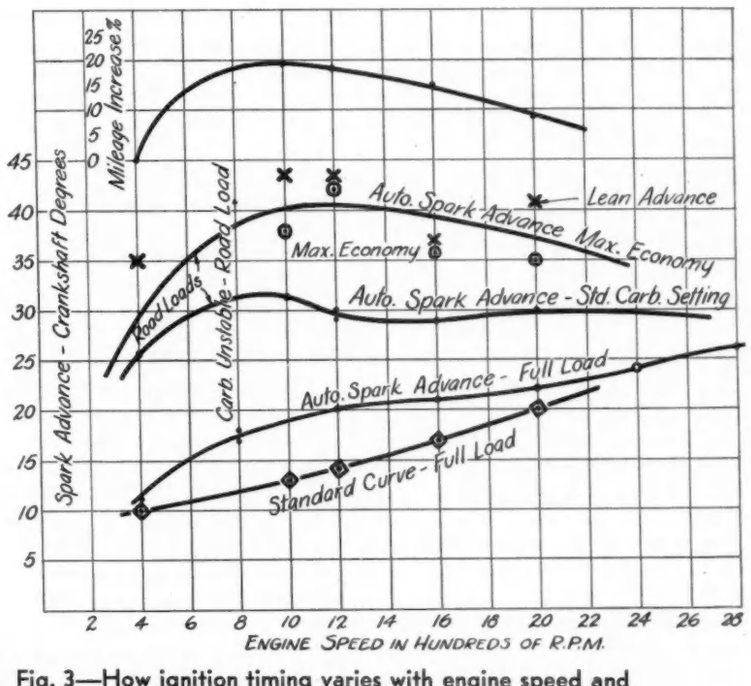


Fig. 3—How ignition timing varies with engine speed and carburetor setting + + + + + + + + +

factory economizer setting in standard practice. The decidedly convex curve next above is produced automatically when the carburetor is adjusted for maximum economy by means of a flow meter. The several crosses above this curve denote spark advances obtained automatically when the carburetor is adjusted for a mixture too lean for maximum economy. The upper curve represents the increase in fuel mileage due to the use of this form of automatic spark control and carburetor adjustment for maximum economy, as compared with the normal carburetor setting and standard spark advance, it being assumed that no manual adjustment of the spark is made (in accordance with the usual driving practice) and that the spark advance for which the engine is set is such that there is no "pinging" under continued operation at full load.

The automatic carburetor control, to which reference has been made already, was designed to cover not only normal operating conditions but also conditions during the starting and warming-up periods. In this control, use is made of the gas pressure acting in one end of the spark control cylinder, to actuate a diaphragm of small area. This diaphragm acts in series with a larger one actuated by the vacuum in the inlet manifold, the two together overcoming the tension of a relatively heavy spring. When the engine is stopped, the choke is fully closed by the spring, but whenever the crankshaft is revolving, either under power or while being cranked, the pressure obtained from the engine cylinder through the control valve together with the vacuum in the inlet manifold overcomes the spring to the necessary extent and opens the choke as required. The carburetor control is arranged to operate on the lean side of full power, and just before the "full-power" point is reached, as indicated by the cylinder pressure and the inlet manifold vacuum, the control action is eliminated, that is, the choke is fully opened.

With a wide-open throttle, when there is practically no vacuum in the inlet manifold, control is effected by the cylinder pressure alone, whereas when the engine is idling, or operating on part-throttle, the cylinder pressure and the inlet manifold vacuum combined effect the control. When the car is driving the engine (coasting), the very high vacuum in the manifold alone holds back the spring, there being then no pressure in the engine cylinder. A thermostatic latch or stop might be arranged to cut out this control when the engine is hot, so there would be no choking when starting an engine already warmed up. It is claimed for this carburetor control that it produces a smooth, cold start and a rapid getaway.

The same form of control element has been applied to aircraft engines to prevent detonation by partly closing a throttle when explosive pressures in the engine cylinders become excessive. Communication between the engine cylinder and the control cylinder must then be over a sufficiently wide range to include all points at which excessive peak pressures may occur in the cylinders, and a range of 10 deg. of crankshaft motion has been found sufficient.

Mr. Stanton states that in an air-cooled aircraft engine, when changing from a suitable fuel to one having too low a knock value, so that only 75 per cent of full power could be developed without danger, this control system limited the increase in engine temperature to 30 deg. and permitted of the development of the maximum power obtainable with the poorer fuel under all conditions.

Bureau of Standards Studies Sparks

THE ignition value of electric sparks of different characteristics (from magnetos and battery systems, and of different capacitance and inductance components) have been studied by Melville F. Peters, Wayne L. Summerville and Merlin Davis of the Bureau of Standards as part of a new research on ignition phenomenae undertaken for the National Advisory Committee for Aeronautics. The method employed consisted in the measurement of the volumes of hydrogen and oxygen combined by the sparks at low pressure. The gases were contained in a tube in the proportion of one volume of oxygen to two of hydrogen, at pressures below three centimeters of mercury, at which the sparks do not initiate an explosion but cause molecules of the two gases to combine "by collision."

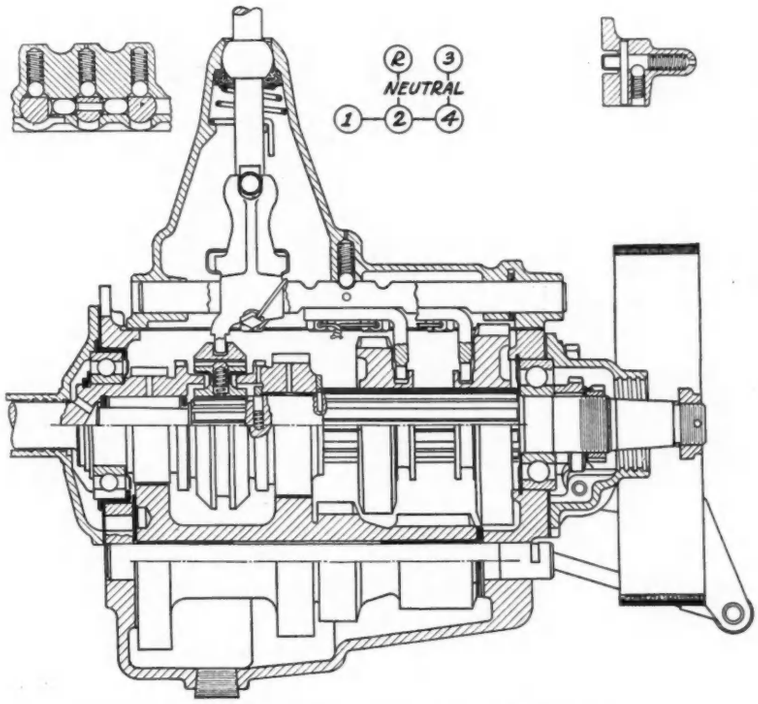
By capacitance component of the spark is meant that part of the discharge which occurs immediately upon the breakdown of the gap. It is oscillatory in nature and highly damped, and it represents the energy which prior to the breakdown of the gap was stored in the capacitance of the secondary circuit. This part is generally called the spark proper or head. During this portion of the discharge, which lasts only a few micro-seconds, the maximum current may be hundreds of amperes.

What is called the inductive portion, the arc or the tail of the spark, is that portion of the discharge which occurs after the oscillations of the capacitance component have ceased. It represents the discharge of the energy which previous to the breakdown of the gap was stored in the magnetic field of the coil (and electrostatically in the primary condenser). It is characterized by a current flow of a few milliamperes which decreases to zero in a few milliseconds.

It was found that with constant energy the amount of reaction increases as the capacitance component of the spark increases. The use of a series of spark gap may decrease or increase the amount of reaction, the effect depending upon the amount and the distribution of capacitance in the circuit. So far as the work has progressed, it has been found that sparks reported by other investigators as being most efficient for igniting lean mixtures cause the largest amount of reaction. Differences between the amount of reaction with a magneto spark and an ignition spark coil were noted. The method appears to offer a means of determining the most efficient spark generator for internal-combustion engines as well as determining a relation between the character of spark, energy, and effectiveness in igniting inflammable mixtures.

Report No. 359, which deals with these tests, may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Warner Four-Speed Transmission Has New Synchronizing Mechanism



Sectional view of new Warner transmission. The detail in the upper left-hand corner shows the interlock between shifter bars and that in the upper right-hand corner the low-speed safety stop + + + + + + + +

Third speed and countershaft drive have helical silent gears with the synchronizing element for the shift between third and fourth speeds

WARNER GEAR CO., Muncie, Ind., has placed in production a four-speed transmission embodying the features of a synchronizing mechanism for the shift between third and fourth speeds, and helical silent gears for the countershaft drive and the third-speed pair. This new transmission, known as the Syncro-Silent, is being used on the Graham-Paige 1931 line. The two pairs of constant-mesh helical gears are cut with teeth of such "hand" that the end thrusts due to them when operating in third gear are opposed in direction and substantially balance or neutralize each other. A longitudinal section of the transmission together with a diagram of gear positions and a number of detail views is reproduced herewith.

Referring to the drawings, it will be seen that there is a bronze thrust washer at each end of the countershaft cluster, this being intended chiefly to take up the countershaft end thrust when operating in first or second forward speed or in reverse, when only one of the two pairs of helical gears is under load.

The first forward speed is provided chiefly as an emergency speed, and the position of the shift lever corresponding to it is set off to one side, as shown. One of the detail views shows the low-speed stop arrangement, which is provided to keep the driver from going into first speed accidentally. It consists of a plunger and cross poppet carried directly in the shift rail end, with which the lower end of the control lever engages. When in neutral, the lower end of the control lever contacts the plunger, and to get into first speed it is necessary to push the plunger back into its speed, allowing the lever to drop into the operating slot of the shift rail end or head. In order to push back in, it is necessary not only to overcome the resistance of the spring behind the plunger, but also to raise the poppet ball out of its seat. If the spring and plunger alone were provided it would be necessary to have quite a heavy spring in order to create a noticeable resistance at the moment of contact, this pressure becoming heavier as the control lever is moved over. By adding the cross poppet, the heaviest resistance comes at the moment of first contact, which is as it should be. As soon as the poppet ball is raised out of its seat, the resistance is reduced, and it remains lower for the remainder of the cross-travel..

In the synchronizer of this transmission, the manufacturers feel they have reduced the friction-synchro-

nizer idea to about its simplest form. Very little mechanism is involved, and its action is easily understood.

As may be seen from the drawing, the forward end of the main shaft is splined, and carries on it a sliding head. In the two faces of this head there are female conical surfaces which are provided with bronze liners. Engaging with these are corresponding male cones, which are carried on extensions of the main drive gear and of the third-speed mainshaft gear. Sliding on the clutch head is a toothed-sleeve operated by a shift fork. The internal teeth of this sliding sleeve fit corresponding external teeth on the clutch member. Carried within the clutch member is a series of six spring-pressed plunger poppets. There is a groove on the inside of the sliding sleeve which matches the contour of the ends on the poppets.

In order to move the outer sleeve axially, it is necessary to raise these six poppets against their combined spring pressure. The resistance created by these poppets causes the clutch head to slide along the splines on the main shaft, into engagement with the mating cone; moving forward, for example, engages the cone on the main drive gear to synchronize for getting into high speed.

As soon as the poppets have been lifted out of their groove, the outer sliding member can travel on forward to engage clutch teeth which are on the outside of the male cone member of the main drive gear. There are, of course, similar clutch teeth on the third-speed gear.

The ends of the teeth on both of the clutching members are chamfered, of course, to facilitate engagement of the sliding sleeve over the clutching head. While this mechanism is quite simple, we are assured that the synchronizing effect has proved to be quite satisfactory, not only for shifting up but also for shifting from high to third.

This transmission is also made without the synchronizer.

Reinforced Cylinder Head Gasket Has High Tensile Strength

A NEW type of gasket, for use in cylinder head, manifold, carburetor and water-line joints, is being marketed by the Detroit Gasket & Mfg. Co. Among the advantages claimed for it are low manufacturing cost, high resistance to heat and pressure, ability to readily adapt itself to surface variations and high tensile strength of the steel reinforcement.

The gasket is made up of a steel sheet which has had tongue-shaped projections, closely spaced and staggered, formed on both sides of it in a punch press. An enlargement of this sheet is shown in Fig. 1. Two sheets of asbestos which has been treated to render it impervious to gasoline, oil and water, are forced down over these tongues under high pressure, and into the cup-shaped depressions formed by the punching out of the tongues. During the pressing operation the tongues are clinched over so as to anchor the asbestos to the sheet steel still more firmly. (Fig. 2.)

It is claimed that the closely-spaced embedded reinforcements constitute a series of barriers which oppose the tendency of the gasket to burn and tear under the effects of heat and pressure. The gasket is stamped out from the sheet after the latter has been subjected to the compression process. This method of manufacture calls for simple dies only, and in consequence the delay between the time of receiving blueprints for a gasket and beginning of shipments has been reduced to as low as 24 hr.

Fig. 1—Steel reinforcing sheet, looked at from the top and at a slight angle +

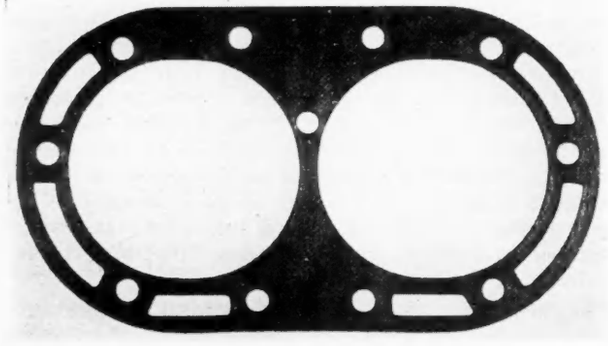


Fig. 3—Photograph of complete gasket + + + + + + +

Fig. 2—Section of the gasket sheet before and after compression +

JUST AMONG OURSELVES

Ability to Move Them Gages Used Car Values

WHILE we're rejoicing about the first signs of increased new car business and the relatively low level of dealer used car inventories in number, the dollar value of those used car inventories in terms of practical sales possibilities can't be forgotten.

Whatever these used cars may have been written down to on a dealer's books at the beginning of 1931, their real dollar value depends on his ability to move them. And reports coming to *Automobile Trade Journal* at the beginning of February from dealers widely scattered geographically and as to makes handled just don't present any bright picture on that score. Less than 10 per cent of these comments on used car sales conditions are favorable to date.

Many report no demand for used cars at any price; some say sales can be made only at extremely low prices. One report tells of a used car auction held by a dealer in Alabama, whose advertising and sales expense on the auction was greater than the total number of dollars taken in at the sale.

Several of the favorable reports come from Ohio. Many of the most unfavorable come from Alabama, Kansas and Louisiana.

Factories really interested in dealer profits will continue to keep a close eye on used as well as new car movements as the year wears on. It is true that used car stocks are not high as compared to previous years. But, after all, the number of cars in stock can properly be adjudged high or low only in relation to rate of current sales.

Stability of Employment An Economic Need

BEHIND the smoothly molded sentences and the rhythmic, modulated diction of Julius Barnes, spokesman-in-chief for American business, there frequently lurk a directness of thought and a radicalness of conception often missed by his casual reader or hearer. Frequent watching of Mr. Barnes in operation at public gatherings, formal and informal, as well as careful perusal of many of his writings has led us never to be lulled and enraptured too much by the glorious cadences of his perfect expression and thereby miss the sometimes biting significance of what he really has to say.

As chairman of the board of the U. S. Chamber of Commerce, Mr. Barnes has just appointed a committee whose aim will be "to devise measures to insure stability of employment and shield it against the effects of seasonal and cyclical fluctuations." And he announces the purposes of and need for such a committee in a typically euphonious statement. Every automotive executive should read it. It was published in the newspapers on Feb. 8.

Julius Barnes Suggests

HERE are some of the things he suggests:

1. Assurance by certain key industries of uninterrupted employment to their workers.

2. Attempts to stabilize employment throughout whole industries by trade associations, using same methods for whole industry as have been already applied successfully in certain individual companies.

3. Business *must* find a way to stabilize employment; if it doesn't, "ill-conceived governmental remedies might easily, as they have elsewhere, lead to greater ills than those which they were intended to cure."

We haven't quoted Mr. Barnes quite accurately in the above paragraphs; he wasn't actually quite so definite as we have indicated. But he did lay down another challenge and outline another necessity for American business which deserves the attention of every practically-minded executive.—N. G. S.

Utilization of Proper Cutting Fluids Economies in Production

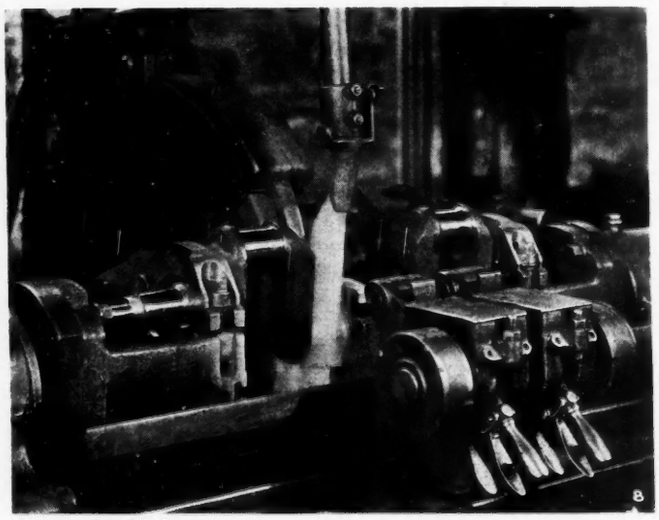
Application of cutting fluids require a comprehensive study of the operation, tool form, finish and other details which may be encountered

NOTWITHSTANDING the importance of cutting fluids (water, cutting oils and cutting compounds in general) and their influence upon cost and production rates in all metal-cutting operations, considerable confusion still exists concerning their utilization and selection. Because suitable cutting fluids may cut costs, increase production rates, and lengthen tool life, the following study is designed to give in brief form the functions of an acceptable cutting fluid, many of the variables involved, and touches upon some of the recent theories underlying the problem. No attempt is made to give specific recommendations because of variations in operating conditions and the general lack of standardization.

Several striking features deserve special prominence at this point. One is that no application of cutting fluid is complete without a comprehensive study of the machine operation, tool form, quality of finish, and other factors to be discussed in detail later. Another is the constant development of new compounds designed to improve manufacturing conditions, at lower cost. Finally, attention is directed to the wealth of research work on the part of the oil manufacturers, machine tool builders and others. Although machine tool builders are reluctant to publish recommendations because of the infinite variations in actual practice, they do know a great deal about their own machines and can be of great help to the production man.

Before passing to the formal discussion of the subject, it may be well to mention some of the general types of cutting fluids used today. The list given below could be expanded but it is hardly necessary to do so for our purpose. (1) Air suction (2) Air blast (3) Water (4) Water and alkaline mixture (5) Soluble oils (6) Animal or vegetable oil (7) Straight mineral oil (8) Mineral-lard oil (9) Sulphurized-mineral-lard oil (10) Sulphurized-mineral oil (11) Mixture sulphur-base and mineral oil.

What are the functions of a cutting fluid? Some that are generally accepted by modern investigators are given below:



Courtesy Sun Oil Co.

Crankshaft grinding needs a specialized cutting fluid application + + + + + +

Functions of a Cutting Fluid

(1) Coolant (2) Lubricant (3) or a combination of 1 and 2 (4) To increase life of tool between grinds (5) To control quality of machined surface (6) To carry away chips, particularly in deep drilling; in grinding to prevent glazing of wheel (7) Rust preventative by coating finished parts with a film of oil.

If we recognize that the utilization of cutting fluid is decidedly an art, we shall be much nearer a solution for the specific case. As an adjunct, we must also carefully consider the nature of the variables involved, as they hold the real key to practical and economical utilization. Although many other factors could be added to

Will Pave the Way to

by Joseph Geschelin

THIS is intended to be the first of a series of studies in this field. A second article will be based entirely upon field practice in automotive plants since case studies are the most important sources of information in the present state of the art. Field practice will be developed from an analysis of a comprehensive questionnaire which is being sent to all those concerned with metal cutting in automobile and parts plants.

the following list, it represents a sufficient number of variables to bring us face to face with the realization that this is no simple problem; that it requires intelligent investigation; that it calls for a real get-together of the tool engineer, the oil expert and the machine tool builder.

(1) Type of cut, light or heavy. (2) Kind of material. (3) Type of machine tool. (4) Operating conditions, such as speeds and feeds. (5) Type of cutting tool. (6) Tool form. (7) Location of the stream of cutting fluid and the volume available. (8) Considerations of economy, involving quality of the finished surface and price of the cutting fluid.

Naturally the art of metal cutting and its related functions have many ingenious theories advanced to explain the obscure phenomena which occur. Some of the less debatable of these theories concerning the action of cutting fluids are touched upon in a brief way. Incidentally, we are inclined to suggest that the lack of agreement even among experts may be due largely to the difficulty of maintaining standard and comparable test conditions rather than to any serious fallacy in a functional theory.

When it comes to the fundamental functions of lubricating and cooling, opinions seem to be sharply divided, but actually a common-sense attitude predominates. It appears to be generally accepted that in certain specific cases, the primary function of the cutting fluid is that of a coolant, also that in other specific cases its primary function is that of a lubricant. Generally a cutting fluid provides the dual service of a lubricant and coolant in varying degrees, depending upon the nature of the job. There seems to be a lot of meat in this. If by careful study we could determine even approximately to what extent the cutting fluid is a lubricant and to what extent a coolant, we would have a positive answer to the problem. For we could then determine not only the type of fluid to be used, but also the kind of mixture. We would know, for example, whether a given soluble oil should be diluted with 10 parts of water, 25 parts or 50 parts. However, another factor—fluidity or ability to "wet out"—is now considered as important as lubricity and cooling properties. This factor is discussed more in detail later.

What happens when metal is cut? Many investigators are trying to find out. And the final answer, or at least a reasonable approach to it, should shed considerable light. Some interesting studies in this direction recently have been made by Prof. O. W. Boston of the University of Michigan. One of the most comprehensive studies has been conducted by Professor K. Gottwein of Breslau, and is contained in a book "Cooling and Lubrication in Metal Working," which was translated from the German by W. H. Herschel of the U. S. Bureau of Standards. The following quotation from this book supplies an interesting speculative basis for the me-

Courtesy Cincinnati Grinders Incorporated

Another cutting fluid application is shown on this heavy-duty grinder + + + + + +

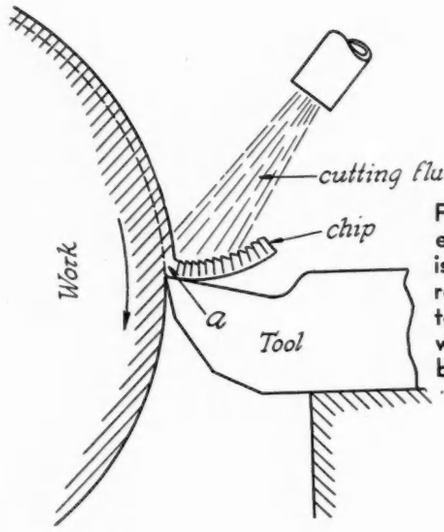


Fig. 1—The more effective cooling is obtained by directing the fluid toward the place where the chip begins + +

chanics of chip formation and also the little discussed aspect of how the stream of cutting fluid should best be applied.

"As regards the application of the cutting fluid, this is best done from above, as near as possible to the root of the chip; that is, at the place where the heat originates in consequence of the compression and tearing away of the chip. In Fig. 1 the stream is directed from above toward the place where the chip begins, i. e., toward the root of the chip. This is the more effective cooling.

"If, however, the jet is introduced between the front of the tool and the chip, the latter would have already attained a high temperature, and the quenching effect of the jet of liquid would have led to an undesirable breaking off of the chip.

"Now if this explains the good cooling effect of directing the jet upon the root of the chip as shown in Fig. 1, there remains the question how we are to imagine the lubricating action of the cutting fluid, or the effect of making the chip pliable at its root, which is of advantage on account of the chip's coming off quietly. Fig. 2 shows how the chip comes off in roughing work.

"In general with materials which show a contraction in tensile tests, when the chip passes over the front of the tool there is first a strong compression of the element *I* of the chip, and then an oblique tearing away at the point *a*. Finally the element of the chip *I* slips along an oblique groove on the main body of the shaft *N*, until the next element of the chip has been formed and now in turn passes over the face of the tool. This movement of slip under pressure of the element of the chip is obviously aided and made more regular by the lubricant which penetrates to a greater or less depth into the grooves of slip, somewhat as a file easily slips on lubricated work. On the other hand, when there is entirely dry friction of the elements of the chip on each other, there may occur a stoppage of the slip of the particles of the material slipping on each other, whose sudden ending with a jerk, due to the quickly increasing stress in the grooves of slip, in consequence of the process of turning, may lead to a breaking off or spurting out of the elements of the chip. If the chips do not break off, at least there occur strong gaping grooves between the elements of the chip. However, if the root of the chip is lubricated then even lubricants which are very viscous at ordinary temperatures will penetrate quickly into the slipping grooves when the temperature at the point of cutting is correspondingly high."

An explanation which has considerable following in this country has been excerpted from the excellent booklet published by D. A. Stuart & Company.

"Fig. 3 illustrates the generally accepted theory of the metal cutting process and the relation of chip to tool. The theory supposes that the chip *B* is wedged or split off ahead of the edge of the tool and has a bearing on the rake of the tool at *D*. The bearing action at this point is like that in any other bearing, as we have two metal parts in moving contact. This condition generally requires some form of lubrication. In this situation, however, conditions differ from those in the ordinary moving bearing in many respects. Especially in the case of cutting the ferrous metals the contact is between two like metals instead of between one metal selected for its bearing quality in relation to the other. The area of the bearing surface is very small in proportion to the load. A high temperature is generated by the plastic flow and the deformation of the metal and this heat has a repellent action on most lubricants. The mechanical motion of the parts is away from the contact point and this point is generally effectually shielded from direct application of the lubricant.

"It is readily apparent that as the angle ADE is decreased, the pressure and deformation decrease and vice versa. As this angle is influenced by the rake angle of the tool it explains why the rake is really the critical angle of the cutting tool and also explains why any tendency to crowd the chip should be avoided by providing plenty of chip room. This is especially true in thread chasers, some types of hobs and other tools in which there is limited space for the chip to clear."

Many production men no doubt have heard of the principle of "wetting out." If not, they will hear more and more about it in the near future. Gottwein defines this principle as follows:

"By wetting value of a liquid is understood the property of spreading more or less completely over the surface of the tool and work; of creeping to a certain extent in all directions over the surfaces, and thus wetting them and carrying away the heat. It depends therefore on its power of spreading on another material. The spreading is caused by forces which seek to draw the little drops of liquid over the surface of the work; these forces are opposed by stresses tending

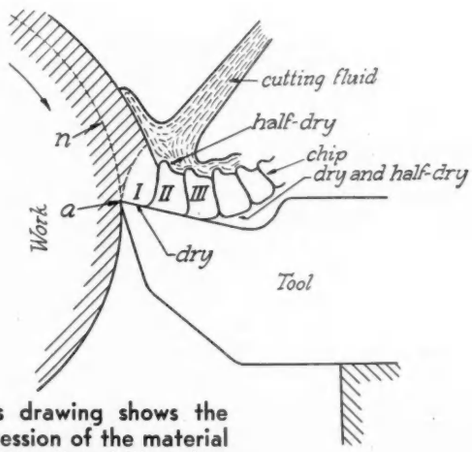


Fig. 2 — This drawing shows the strong compression of the material at I and the chips II and III as they pass over the tool + + + +

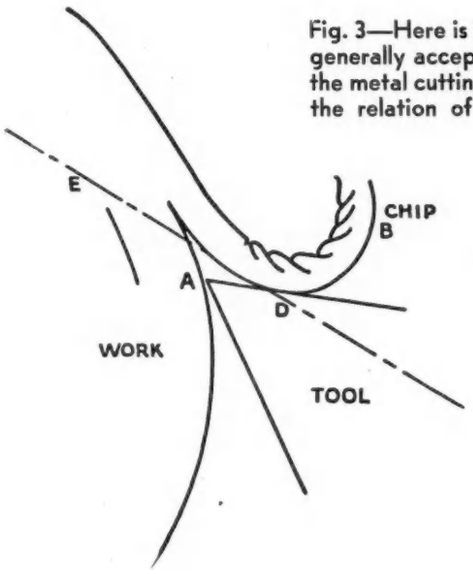


Fig. 3—Here is illustrated the generally accepted theory of the metal cutting process and the relation of chip to tool

to drag the liquid toward the center of the drop and bring it into a spherical form. These latter stresses make themselves evident in the surface tension against air. Therefore, the less the surface tension against air, the greater, in general, will be the spreading power and therefore the wetting power."

Along these same lines, F. V. Hartman of the Aluminum Company of America adds that—"generally speaking, it would therefore seem that a cutting compound does seem to offer a certain amount of assistance as a lubricant in almost all classes of work. For some machining operations, particularly those that are intermittent for the individual cutting edges, there is little doubt but what the cutting compound is able to offer appreciable lubrication to the tip of the tool."

Physiological effects also must be considered. An acceptable cutting fluid should have no objectionable odor and no tendency to ferment. The use of solvents, benzene and carbon tetrachloride may cause physical discomfort to the machine operator. By far the most troublesome thing in the past has been the tendency toward skin diseases among machine operators. Although space does not permit a detailed discussion of this phase, considerable research work has been done, a fine example being the report "Causes of Skin Sores and Boils Among Metal Workers," by the E. F. Houghton Research Staff.

Because of diversity of practice, there is not much point to generalizing about the composition of the cutting fluids on the market nor the recommendations for their use, because the selection of the fluid, as well as the best mixture, must be worked out to suit specific conditions.

Plain water is a remarkably good cutting fluid in some respects. It is certainly an efficient coolant, but its high surface tension prevents complete utilization due to inability to "wet out" effectively. Surface tension may be decreased by additions of soda or calcium soap, but these inclusions may attack the paint on the machine and destroy the lubricating oil.

By far the most forward stride in cutting fluid practice has been the steady improvement in the quality and effectiveness of water-soluble and emulsifying compounds and other types of cutting fluids. Good grades of soluble oil are economical and approach closely the specifications for a universally adaptable fluid and have found wide acceptance on this basis. Among the chief requirements of a good soluble oil are easy mixing, permanence of emulsion and freedom from undesirable chemicals. A stable solution with no tendency to separation is absolutely essential since lack of permanence or stability will lower the wetting out power and will induce rusting due to the presence of "free" water.

Paralleling the developments in this field is the wide use of sulphurized cutting oils. In this class may be included sulphurized mineral oil, sulphurized-mineral-lard oils and sulphur-base products. Further development is going on in and some new grades will probably appear on the market shortly. As in the case of soluble oils, one of the chief requisites is stability or permanency of the mixture, which in turn is intimately related with the chemistry of the manufacturing process. The field of application for the sulphurized oil may be judged from the fact that they are widely used for pipe threading, and broaching, threading, and gear cutting on the soft, stringy metals. Exceptional results have been secured on many difficult jobs and generally where smooth surface finish is desired.

Since the properties and application of common types of cutting fluids are well known, it is unnecessary for us to go into very much detail concerning their utilization.

With the present state of the art and the introduction of the newer types of cutting fluids, it is obvious that metal-cutting plants will find it advisable to recheck their cutting fluid applications for possible added economies. As the matter now stands, it seems perfectly feasible to effect further economies in cost, increased tool life, and increased output by a proper study of the metal-cutting problems.

To the writer the answer seems to lie in a program of intelligent research. Obviously it must be approached with an open mind and with the realization of new developments which deserve consideration. Naturally a program of this kind would be futile without employing sound test methods, one suggestion for a comprehensive test being given below. Variations of this probably will take care of most operating conditions.

Procedure for Testing Machine Tool Cutting Fluid

Preliminary

1. (a) Note the strength of mixture, if water soluble. (b) Formula of mixture if blended with other products. (c) Determine desired surface finish. (d) Present tool life. (e) Number of rejects. (f) Speed of machine. (g) Oil consumption. (h) Preferences of operators. (i) Troubles, if any.

2. Then decide definitely which of the following considerations is most important. (a) Cost of cutting fluid. (b) Tool life. (c) Surface finish. (d) Speeding up of machine.

After this preliminary work, cutting tests should be run on similar machines, one with the present cutting fluid, the other with the new cutting fluid. Before starting the test, both machines should be thoroughly cleaned out, equipped with new tools and run at identical feeds and speeds.

Depending upon conditions the selection of the cutting fluid will be governed by the following factors: (1) Increased cutting speeds. (2) Longer tool life between grinds. (3) Stability of the mixture and the length of time it can be used before replenishing. (4) Better surface quality.

A thorough test, even of the present cutting fluid, may make it possible to effect some economy by going over the variables, particularly tool form and the strength of the mixture. In some cases, an improvement may be effected by increasing the volume of lubricant and perhaps the point of application of the stream of lubricant.

Of course, every student of the problem realizes that the logical starting point for any fresh studies of cutting fluid application must be based upon present practice. For this reason, we have prepared and distributed a comprehensive questionnaire designed to collate the available information from many metal-working plants in the automotive field. The cooperation of production men in giving the benefit of their experience will contribute largely, not only to the general problem, but to their own store of information.

Acknowledgment

ACKNOWLEDGMENT is hereby made to the following who aided so materially by reading the manuscript and making valuable suggestions for its improvement: R. S. Drysdale, Sun Oil Co.; W. H. Oldacre, D. A. Stuart & Co.; D. J. Benoliel, Quaker Chemical Products Corp.; M. D. Hersey, U. S. Bureau of Standards; R. E. W. Harrison, Cincinnati Grinders, Inc.; W. A. Buechner, E. F. Houghton & Co.

Although space does not permit the personal mention of all those participating in this study, we wish to acknowledge the cooperation of the machine tool builders and cutting oil manufacturers who helped us so generously on this job.

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Industrial Traffic Management Studied in Government Survey

THAT effective traffic management in commercial and industrial concerns now is a major phase of general business activity and a factor of fundamental importance in the elimination of distribution wastes in American industry is indicated by the report of a special study of the methods and problems of industrial traffic management made public today by the Department of Commerce.

The report "Industrial Traffic Management" presents a cross section of the traffic, transportation and shipping arrangements of the nation's business enterprises. It aims to delineate the functions, organization and control of traffic departments as exemplified by actual current practice in industry. The material obtained is expected to prove of assistance to firms which contemplate establishment of a traffic department in working out a system suited to their needs, and to give those with departments already in operation a basis for checking the efficiency of their methods.

Some of the more important sources of waste which may result from inadequate traffic management are shown to be failure to get proper rates on commodities shipped; failure to combine less-than-carload shipments into carloads to get the benefit of carload rates; carelessness in checking freight and express bills; neglect to make out and properly support claims against carriers; and failure to see that commodities shipped are properly packed to carry safely to destination.

The need for traffic administration is not dictated by the size of the business alone, the report concludes, although this factor does largely determine a firm's need for a separate traffic department and the sum it can allot for traffic work. Ways are pointed out in which the concern which is unable to maintain full or even part-time traffic departments may nevertheless obtain capable traffic direction through outside sources.

The report gives detailed consideration to the place of traffic administration in business in general, functions of industrial traffic departments, control and distribution of traffic functions, the cost of industrial traffic administration, and the relation of traffic management to other internal functions such as purchasing, selling, accounting, advertising and research.

Copies of "Industrial Traffic Management" may be obtained at 30 cents from the Government Printing Office, Washington, D. C., or from branch offices of the Bureau of Foreign and Domestic Commerce located in principal cities in various parts of the country.

English Operator Tests Bus Powered by Standard Engine Using Heavy Oil

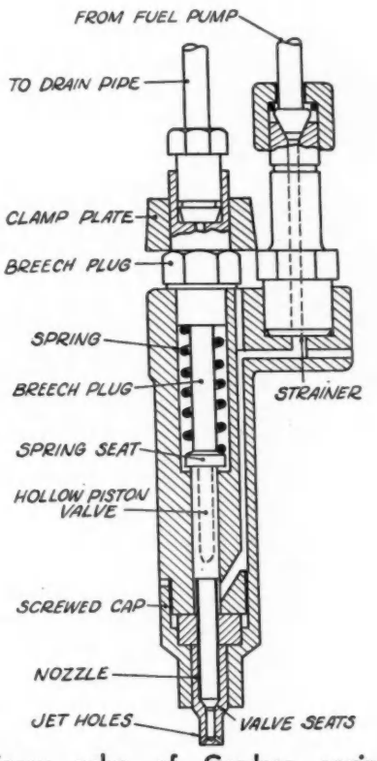
by M. W. Bourdon

THE Crossley Motor Co., Manchester, England, has supplied to the city of Leeds a double-deck bus with a heavy-oil engine, and a second bus of the same type has been ordered by the city of Sheffield. In both cases the object is to gain an idea of the suitability of the oil engine for city bus service.

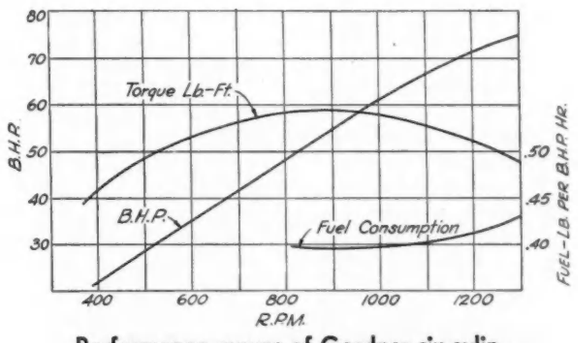
The chassis, apart from the engine, is a standard Crossley production with a slight modification at the front end of the frame to accommodate the oil engine, which is somewhat longer than the gasoline engine normally used. The appearance of the complete vehicle is conventional.

The engine used has not been specially designed for automobile service, but is a standard Gardner made for marine service in one to six-cylinder types. The engine used in the bus has six 4¼ x 6-in. cylinders, and a speed range under governor control of between 350 and 1350 r.p.m., although considerably higher speeds are attained on the test bench. The crankcase is in two parts, the lower half carrying the seven bearings of the crankshaft; the cylinders and water jackets are in two blocks of three, but separate cylinder heads are used carrying the overhead valves, atomizers and special compression control mechanism. Aluminum pistons are used, with forged steel tubular connecting rods, these having ducts to carry lubricating oil under pressure to the piston pins.

On the left of the engine is the fuel pump assembly, which consists of two banks of three pumps, each operated by its own cam on a short camshaft with a lever by which it can be put into or out of action. The fuel reaches the pumps through a combined heater and strainer and passes thence to the atomizers, which also have strainers in them.



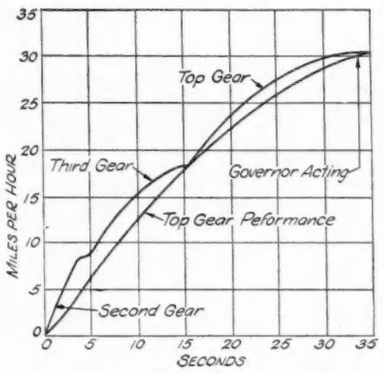
Spray valve of Gardner engine



Performance curves of Gardner six-cylinder 4¼ x 6-in. oil engine used in Crossley bus

The fuel pumps are of the constant stroke type; injection commences at 10 deg. before top dead center, with a variable cut-off by means of a helical slot in a rotatable sleeve surrounding the pump plunger. The maximum period of injection is 20 deg.; the maximum fuel injection pressure is about 2000 lb. per sq. in. Control of the amount of fuel injected per stroke is effected by the centrifugal governor, which takes effect upon the cut-off. The engine is therefore under governor control at all speeds; thus, when maneuvering, the driver need not use the accelerator pedal, for engaging the clutch increases the load and causes the governor to lengthen the injection period, so increasing the quantity of fuel supplied per stroke. Depressing the accelerator or pedal increases the load on the governor spring, with the same result as governor action.

A special feature is that starting from cold is done by hand without the aid of artificial heating, by electric coils or otherwise. This is effected as follows: On each cylinder head is a lever normally pointing downward; when this is raised to a horizontal position the inlet valves are prevented from closing completely, thus all the cylinders are fully decompressed to permit the engine to be swung by hand. When the flywheel has gained momentum a lever beside the radiator is moved, causing the compression control levers on the front two cylinders to be raised to a vertical position; this has the effect of temporarily increasing the compression in those two cylinders far above the normal and insures the firing of the charges therein, in spite of the engine being cold. The remaining four compression levers are then raised to a vertical position, and when it is evi-

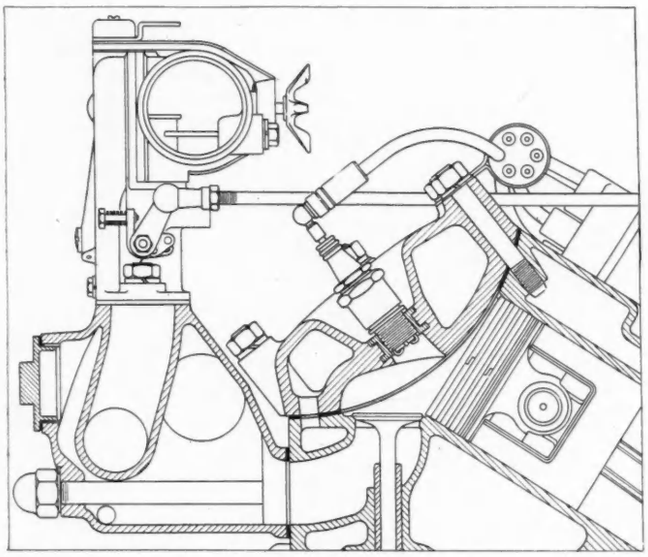


Acceleration curves of Crossley oil-engined bus with four passengers aboard

dent that all cylinders are firing the compression control levers are successively lowered to their normal position. This position gives the inlet valves an opening point slightly in advance of top dead center and a closing point 40 deg. after bottom center. The higher compression for starting is obtained by a timing of the inlet valves by which they close earlier, viz.: at bottom dead center. In conjunction with this means of varying the compression for starting, provision is made whereby the governor control can be set to permit an increased fuel charge to be delivered to the sprayers.

A spring-loaded sprayer is fitted direct into the cylinder head so that its nozzle and three radial jet holes project directly into the main combustion chamber formed by the flat cylinder head and concave piston crown.

The normal compression ratio is 13 to 1 and the maximum M.E.P. is 98 lb. per sq. in. In its present form the engine weighs 25 lb. per b.hp. with flywheel, full water jackets and lubricating oil. At 1300 r.p.m. it develops 75 b.hp. The chassis weighs 14,000 lb. and the unladen bus about 21,000 lb.



Tatra cylinder and head design + + + + + +

Tatra Engine Has Cylindrical Head-Joint

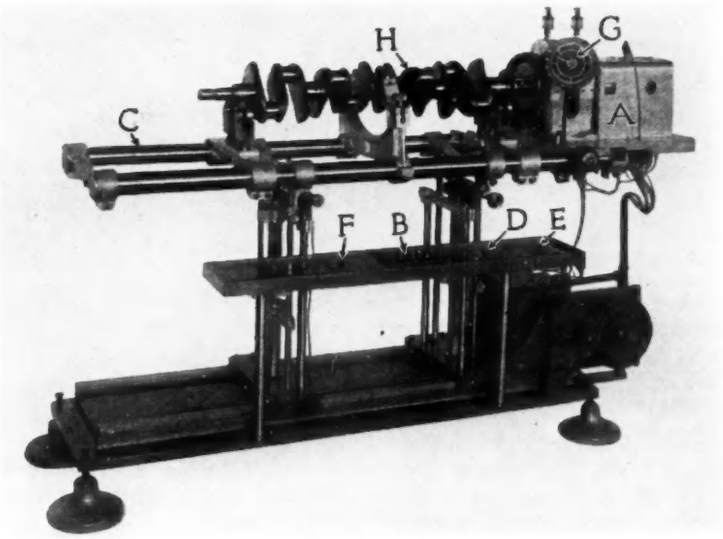
A NEW style in detachable cylinder heads has been introduced by the manufacturers of the twelve-cylinder Tatra car, the Nesselsdorfer Car Works, in Nesselsdorf, Czechoslovakia. The two banks of cylinders of this engine make an angle of 60 deg. with each other and the valves of both sets are arranged horizontally and are operated from the same camshaft. The valve stems thus make an angle of 60 deg. with the cylinder axes. This calls for an unusual form of combustion chamber, and the machining problem has been solved by making the joint between the cylinder and head cylindrical. The under surface of the entire head also is cylindrical except for depressions in it directly over the valve heads. It will be seen that the piston comes close up to the cylinder head when at the top end of the stroke, and considerable turbulence therefore will be induced in the charge at about the time it is fired. To judge by the bushing for the spark plug, the cylinder head is cast of aluminum, and it would seem that the cylindrical joint might have a favorable effect in overcoming difficulties due to differences in heat expansion between the cast iron cylinder block and the aluminum head, since apparently the head would be applied more firmly against the gasket by any unusual heating.

A GEAR-SHIFT indicator has been developed by A. J. Heronimos of London, and is described recently in Engineering. It consists of two hollow-concentric cylinders driven from the clutch shaft and the propeller shaft respectively, through flexible shafts. Each of the two cylinders has one series of inclined slots cut in its wall for each change of forward speeds. The slots of each series are equally spaced around the circumference, and the numbers of slots in corresponding series are inversely proportional to the speeds of rotation of the two shafts after engagement has taken place. Inside of the hollow cylinders there is a small electric bulb, and when the two gears are revolving at such speeds that engagement can take place without clashing, the slots in them appear stationary. The indicator is installed on the instrument board or on the forward side of the windshield, the latter position being preferred because the driver can there observe it practically without taking his eyes off the road.

Dynamic Balancing Machine for Long Crankshafts

AN improved dynamic balancing machine which is adapted for balancing long crankshafts that require a central support to prevent whipping has been placed on the market by Tinius Olsen Testing Machine Co. of Philadelphia. The machine, known as No. 3, has a rigid vibrating frame supporting the crankshaft (or other part to be balanced), and the amount and angular position of the unbalance are determined by means of compensating weights on the vibrating frame.

A steady-rest *H* is provided to prevent errors due to eccentricity or deflections of the shaft. The main supports and pivots of the balancing frame may be placed in any desired position with relation to the two planes of correction. After having established the desired axial position of the crankshaft with relation to the pivots, the bearing brackets on which the crankshaft rotates may be located in any convenient position on the balancing frame independent of the position of the pivots, and without influencing readings taken from the machine.



No. 3 Balancing Machine of Tinius Olsen Testing Machine Co. The crankshaft is revolved at a speed of 250 r.p.m. + +

The compensating weights and their mechanism are inclosed in a housing *A*, which includes a graduated holder having a weight that may be shifted to compensate for the amount of unbalance in the crankshaft end being checked. Shifting of this compensating weight for amount of unbalance is accomplished by pressing either of the two right-hand switch buttons of group *B* while the machine is running.

Before the weight is shifted, however, the weight holder is first swiveled upon its rotating arbor to bring the weight into the same angular plane as the unbalance, or in the opposite plane, depending on whether the unbalance in the part itself and the compensating weights are on the same side or opposite sides of the pivot. The angular movement of the weight is obtained by depressing either of the two left-hand buttons of group *B* while the machine is running.

After an unbalanced crankshaft to be checked has been placed on rolls mounted on the vibrating frame *C*, it is connected to the drive head through a flexible coupling. Provision is made to lock the balancing frame on the pivot at the left end while a reading is taken for the right-end correction. Similarly, a locking pivot is engaged near the right end when a reading is taken for the left-end correction. In the following description the frame is assumed to be locked on the left-hand pivot to make a right-hand correction.

When the crankshaft is rotated with switch *D* closed, any unbalance will cause an electric spark to jump from the rotating indicator at dial *G* to the graduated metal circle near the periphery of this dial, the indicator turning at the same rate of speed as the work. By observing the degree graduations between which sparks appear, the angular plane of unbalance can be determined.

Switch *D* is then opened and switch *E* closed for determining the angular plane of the compensating weight holder previously referred to. The weight holder is next swung into the same plane as the unbalance by depressing either of the two left-hand buttons of group *B* as already explained.

The machine is then operated with switch *D* closed and *E* opened, and the two right-hand buttons of group *B* are alternately depressed until the compensating weight has been moved to compensate for unbalance, when the sparking ceases.

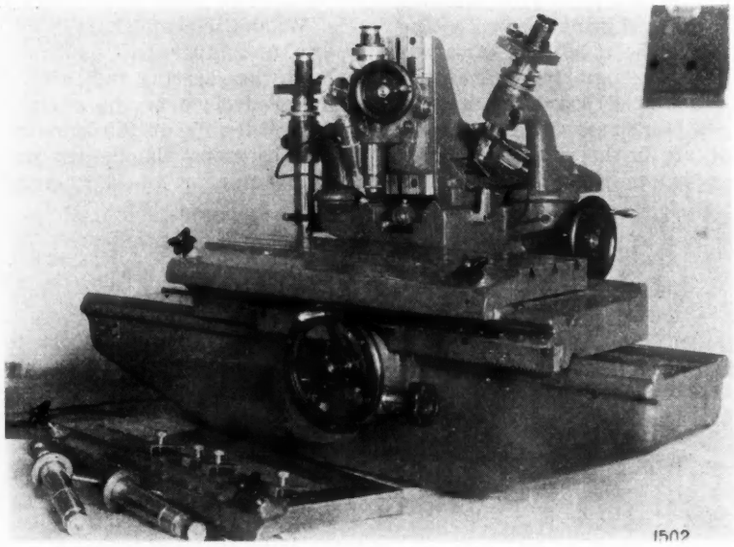
The machine is now stopped in a position with the center mark in one end of the weight holder directly in line with a wire stretched across the round window in front of housing *A*. With the crankshaft stopped in this position, the unbalance is toward the front of the machine and in a horizontal plane through the axis of the shaft.

A mark is then made on the shaft in horizontal plane through its axis and near the right-hand end where one correction is to be made. The amount of unbalance can now be determined by referring to the graduations of the weight holder.

A reading for the left-hand correction is then taken with the left-end pivot free and with the frame vibrating about the fixed pivot at the right end, using buttons *F* and *E* in the same manner as previously described for buttons *D* and *E* when making the right-end correction.

In production service the rate of production of the machine may be increased by the use of suitable charts indicating the amount of metal to be removed for the amount and position of unbalance indicated by the machine.

Universal Measuring Machine Is Offered for Inspection Work



Societe Genevoise universal measuring machine, with equipment for measurements or laying out of holes in rectangular coordinates

THROUGH their American agents, the R. Y. Ferner Co., Investment Building, Washington, D. C., the Société Genevoise d'Instruments de Physique of Geneva, Switzerland, is placing on the market a new type of measuring machine for general use in inspection departments of industrial plants. It is arranged to carry out measurements in two coordinates and can be used for measuring all kinds of workpieces, such as forming tools, profile gages, templets, cams, small jigs, thread cutters, dies, etc. Provision is also made for testing of thread gages, micrometer screws, worms and taps for pitch, angle of profile and diameters by means of an optical method. Measurements may also be made of photographic negatives or prints or any type of recorded charts, such as oscillograph films, X-ray pictures, spectrographic plates, ballistic charts, thermographic and dilatometric tracings, etc.

The precision of the apparatus is embodied in two accurately graduated scales of nickel-steel alloy containing 58 per cent nickel which has the same coefficient of expansion as the steel parts which would generally be measured on the machine. This material takes a high specular polish on which precise microscopic lines can be ruled. It is resistant to corrosion and the scales are therefore permanent and not affected by wear.

The longitudinal slide has an opening 16¾ x 4⅜ in. (420 x 110 mm.) to permit illumination from below. The pieces to be measured are not clamped to this slide but to one of three interchangeable fixtures provided with the machine. One of these is a T-slotted worktable which can be clamped on the slide by means of two bolts with star handles.

A second table that can be similarly bolted to the slide has a strong glass plate 16½ x 3¾ in. (420 x 95 mm.) set flush with the surface over the opening in it. It is used for measurement of any objects with illumination from below, such as photographic plates, profile gages, templets, etc. Screw clamps are provided for holding pieces on this table. The third fixture for attachment to the slide is a pair of center supports for the examination of pieces held between centers such as micrometer screws, worms and thread gages.

The centerline is exactly aligned with the line of displacement of the slide.

A transverse carriage, moved on its Vee and flat ways by means of a screw, serves to carry the sighting microscopes for measurements in the other coordinate. The screw is not used as a measuring device, however.

The locating microscope has a crossed reticle of threads which can be adjusted to insure exact concentricity with the bore of the tool holder. It is used for making all readings on photographic plates, charts and profile objects. Its tube is made of hardened steel.

The goniometric microscope, provided with a fixed cross thread and one which can be turned about the central axis, is used for measuring angles, especially the profile of screw threads. By its vernier these angles can be read to 1 minute of arc. This microscope is also used for the optical measurement of the pitch and diameters of screw threads.

The centering dial indicator, reading to 0.001 in. and sensitive to a higher accuracy, can be used for aligning work or for measuring the distance between holes. The hardened sleeve of the indicator is ground exactly concentric so that in interchanging the indicator with the other tools the precision of the work is not affected.

The minimum free distance between the T-slotted table and the tool holder is 3 in., the maximum 6¼ in., while the distance from the table to the transverse carriage is 2 11/32 in. (60 mm.).

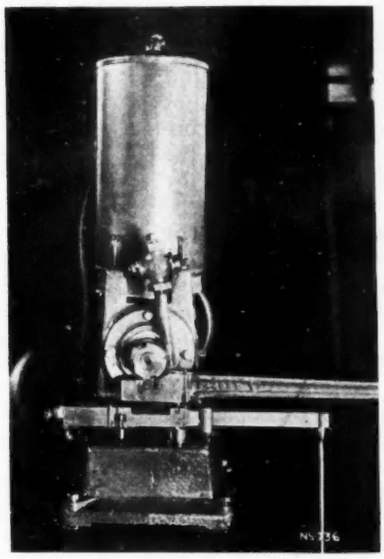
The machine can also be used for checking all kinds of rules, scales on vernier calipers, and the like, or for the measurement of diameter of wire and mesh of cement sieves, or for the counting of threads in textiles. The stretch of test specimens, on which lines have been ruled before test, can also be checked by means of this equipment. The center distance of gears in mesh or the dimensions of watch and clock wheels can be measured, or the diameters of holes in watch jewels.

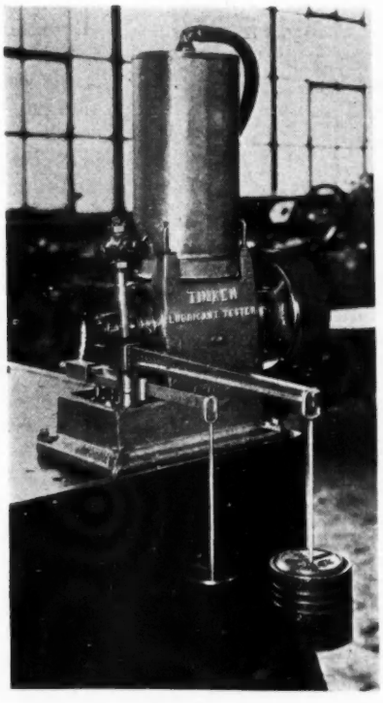
Testing Load-Carrying Capacity of Lubricants

AN apparatus for testing the load-carrying capacity of lubricants has been added to the line of products of the Timken Roller Bearing Co., Canton, Ohio. It was originally developed for use in the company's own laboratory as a means for obtaining information on the effect of different lubricants on hypoid and spiral bevel gears in automotive axles, and to test lubricants in connection with industrial bearing problems. The results obtained in the course of these tests were so satisfactory that it was decided to place the apparatus on the market.

The apparatus consists essentially of a cast-iron base which supports the testing mandrel, two levers, and a container holding about a gallon of the lubricant to be tested. The tank is mounted on top of the base, and just under it is an electric heater, used to raise the oil to any desired temperature up to 210 deg. The oil flows from the tank, over the test piece, to a sump in the base by gravity, the rate of flow being adjusted by means of a valve in the line. From the sump, the oil is pumped back to the tank by a small pump located in the base, and belt-driven from the testing mandrel. The latter extends through the base, and may be either direct or belt-driven by a variable-speed, fractional-horsepower motor. The mandrel is mounted in two Timken bearings, so arranged as to hold it rigidly in alignment, and is tapered at the test end to receive the tapered cup of a Timken bearing. This cup, which forms one of the test pieces, is held in place firmly by a nut on the end of the mandrel, which is threaded to receive it.

There are two levers, one above the other. The upper is called the load lever, and the lower the friction lever. The upper, which carries the test block, is pivoted on a knife edge mounted in the lower lever. The latter is also pivoted on a knife edge and is provided with a stop at the unloaded end. By virtue of this arrangement the test block is always parallel to the revolving cup and the unit loading over the length of both pieces is always constant. The test block is a small piece of metal about ½ in. square by ¾ in. long, hardened to Rockwell C-60 and ground. It is inserted in a notch in the loading lever and held in place by a wedge. In case bearing metals are to be tested, the test block or the cup or both can be made of the appropriate material. The friction lever is provided with a vernier scale, and a sliding weight for obtaining accurate measurements, and both levers are equipped with hangers for carrying adjustable weights.





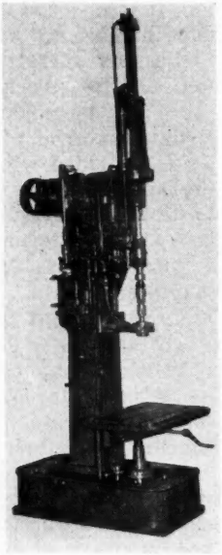
Two views of the device used by the Timken Roller Bearing Co. for testing lubricants + + + +

The operation of the device is substantially as follows: Assuming both test pieces in place, the driving motor or line shaft is brought up to the desired speed, and the lubricant, heated to the required temperature, is allowed to flow over the test block. The loading lever is then loaded by means of weights until the desired unit pressure is obtained between the test pieces. A chart furnished with the apparatus gives the necessary weights on the loading lever per 1000 lb. of unit pressure. If only the load carrying capacity of the oil is to be determined, the test block is removed after 30 minutes running, and examined for signs of scuffing. The degree of scuffing determines the relative load carrying capacity of the lubricant. In case the coefficient of friction of the lubricant is desired, weights are added to the friction lever until it moves away from the stop. Loading the upper lever causes the friction on the test block to move it forward horizontally, unbalancing the friction lever until it rests on the stop. This condition is compensated by adding the weights on the friction lever, until the system is again in balance and the lever is off the stop. The coefficient of friction of the lubricant is then calculated from the weight it takes to balance the levers. The same holds true, of course, in case different bearing materials are being tested. Not the least interesting feature of the machine is the permanence of the records it provides.

NEW DEVELOPMENTS—AUTOMOTIVE

Barnes Honing Machine

DESIGNED for bores ranging from 1 to 4 in. diameter, a new Model No. 204 honing machine has been announced by the Barnes Drill Co., Rockford, Ill. It is of the self-oiling all-geared type, hydraulically reciprocating with a stroke of 12 in.



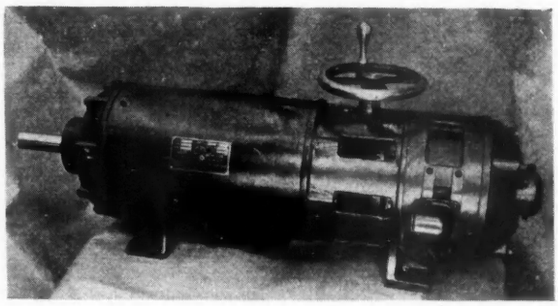
The Oilgear pump and special valve control for automatic spindle reciprocations are used. The cycles of reciprocation may be changed while unit is running, by means of the volume regulator control. The length of the stroke may be set by means of quickly adjustable stops for the right amount of overrun of hone at each end. This feature is important in preventing bell-mouth, barrel shape, and to remove taper. Stroke control rod may be used at will of operator for short strokes at any point in the travel to remove taper or to make any desired correction of cylinder. Cylinders and bores that have been reamed to within 0.001 in. to 0.002 in. of size may be finish-honed on this machine in less than one minute, removing all high spots of the reamed bore, correcting also errors of cylinders out-of-round or slightly tapering. A "mirror finish," may be attained by the use of fine grit honing stones, or polishing shoes.

Motor recommendations are: 1200 r.p.m., 2 hp. for cylinders up to 2 in. diameter, 3 hp. for cylinders up to 4 in. diameter. Floor space 45½ x 20 in. Net weight with motor and starter 1700 lb.

"JFS" Speed Changer With Built-in Motor

IN answer to the demand for compact drives and variable speeds a new self-contained drive has been developed by the Stephens-Adamson Mfg. Co., Aurora, Ill. The drive consists of a standard "JFS" variable speed reducer mechanism with the housing redesigned to take the body of an electric motor of standard make. The motor armature shaft is extended and forms the high-speed shaft of the speed changer. In this way the usual flexible coupling and base plate are eliminated and approximately 25 per cent of the total length and weight are saved. The hand wheel normally used to increase and decrease the output speed of the standard JFS transmission has been replaced by a bevel gear.

The operation of the speed changer section



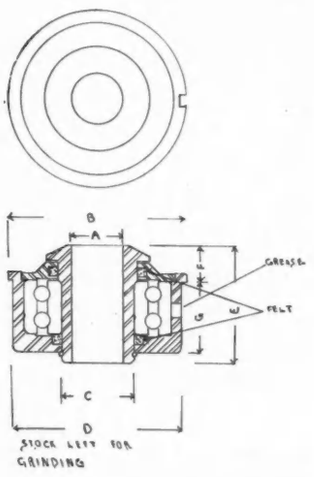
resembles the action of a large roller bearing in which the races and rollers are ground to special shapes.

The motor shaft rotates two inner races which contact with three double conical rollers and cause them to rotate slowly in planetary fashion inside the two outer races which are held from rotating. The three planetary rollers drive a spider keyed to the variable speed shaft. Power can be obtained at an infinite number of speeds by turning the hand wheel, which moves the two outer races nearer or farther apart on the longitudinal axis.

The manufacturer states that, in addition to the standard JFS transmission (transmission only), the new complete-drive unit is to be made in sizes to deliver from ¼ to 7.5 hp., and that with a 1200 r.p.m. drive motor a variable speed range of from 120 to 720 r.p.m. or 24 to 144 r.p.m. is practicable.

National Rotating Jig-Bushing

THE National Boring Tool Co., Detroit, has just placed on the market a rotating jig-bushing which was built for boring-bars originally, utilizing cemented tungsten-carbide as its boring element. The necessity of avoiding preventable vibrations made close-fitting in the bushings of paramount importance. Later, this bushing is said to have found wide use in exact reaming processes, where jig-bushing clearance must be avoided.

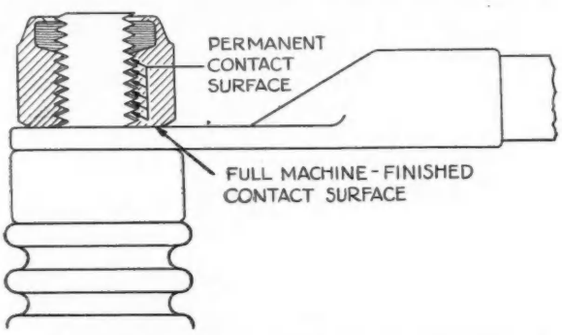


Again it has found a place in line-reaming fixtures and as a bushing in core-drilling jigs, since the revolving bushing not only minimizes wear under these circumstances, but with close fits creates a perfect bore.

PARTS, ACCESSORIES AND PRODUCTION TOOLS

Aga Elastic Stop Nut

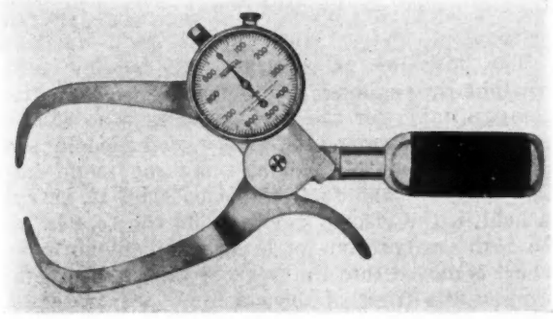
A SPECIAL type of self-locking nut, called an elastic stop nut, is manufactured by Aga Co., Elizabeth, N. J. From the section of the nut shown herewith it will be seen that it has an insert near the outer end of a material different from that of which the nut itself is made. This material is of such character that when the nut



is in place on a bolt or stud, it completely fills the space between adjacent threads, bearing firmly against both sides of the thread, whereas the nut itself when drawn up bears only against one side of the thread. Among the advantages claimed for this nut are that it locks automatically to the bolt and hence is independent of wear and fluctuation in the seating surface; that it is easy to apply and remove with an ordinary wrench, and that it seals and protects the threads of bolt and nut from corrosion and mechanical wear. These nuts have been found useful for flexible mountings, flexible couplings, electrical connections, etc.

Federal Caliper Gage

SPECIFICALLY designed for odd-shaped work and hard-to-get-at surfaces, the Model 49 caliper gage has been placed on the market by the Federal Products Corp., Providence, R. I. This instrument has a range of 3 in., a maximum depth of 4 in., and is provided with a 2 7/32 in.



diameter indicator. The crystal is of non-breakable material.

Jaws of special length and design may be supplied. The weight of this gage is 1¼ lb.

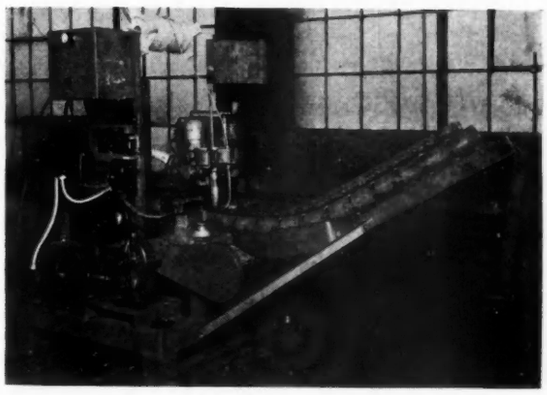
Diamo-Brinell Hardness Tester

AN automatically operated Brinell hardness tester was recently placed on the market by the Pittsburgh Instrument & Machine Co., Pittsburgh, Pa. This Diamo-Brinell Hardness Tester is operated by a system of weights and levers and the Brinell hardness number can be read directly from the gage attached to the machine. The indentation is produced by a diamond semi-ball of 2 millimeter diameter under a load of 120 kilograms. The machine can be operated from any light socket. After the test piece is in place and the motor started, it is only necessary to pull out the "Starter" at the front of the base and the load is automatically applied and released.

Accurate readings are said to be obtained on the hardest of steels and alloys. The impressions are quite small and there is no damage to finished work. For soft material the test load can easily be changed from 120 to 30 kilograms by tightening the screw on the right-hand side of the column containing the weights.

Welding Automobile Starter Frames

AN automatic welder for the welding of automobile starter frames is announced by the Lincoln Electric Co., Cleveland, Ohio. It embodies



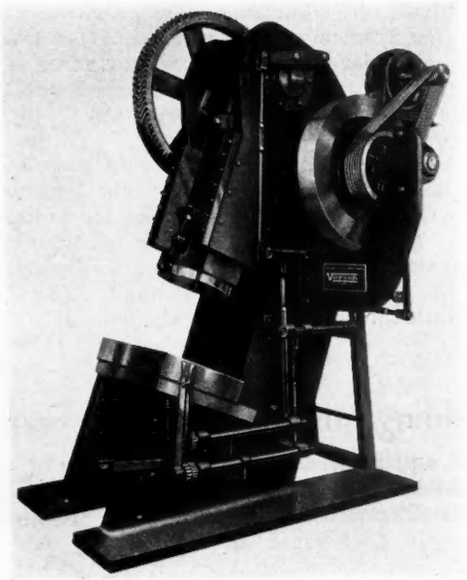
the principles of the shielded arc and utilizes the Electronic Tornado process. The starter and generator frame are of 5/16 or ⅜-in. plate cut to size and shape, punched and rolled into cylinders before being arc-welded. After this the cylinders are fed into a gravity conveyor, being guided automatically so as to keep the seams on top. At the bottom of the gravity conveyor, they go between two rolls which squeeze the seams together tightly as they pass under the arc. No filler rod is used, the two edges of the seam being fused together.

The machine has a capacity of approximately 240 frames per hour and one man and a helper can operate four machines simultaneously, giving an extremely low cost per frame.

NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools

Verson All-Steel Inclined Press

A VERSON straight side permanently inclined press of 250-ton capacity is announced by the LaSalle Machine Works, Inc., Chicago, Ill.



The press illustrated has a 10-in. stroke and 14-in. depth of throat.

The frame, ram and gears are all of welded steel plate construction. Main bearings are bronze bushed and the gibs are of steel with bronze lining. The backshaft works entirely in Timken roller bearings, and a balanced flywheel and flywheel support are also provided. The roller-bearing, multiple-disk friction clutch is equipped with an automatic safety stop designed to disengage at the top of the stroke. An auxiliary hand lever device is provided to disengage the clutch instantly at any point of the stroke. This feature is said to be of great importance for safety and for die setting purposes.

Motor Texrope drive employing the V-belt principle is supplied, and lubrication of the working parts is effected through a one-shot, fluid grease system. Net weight is 30,000 lb.

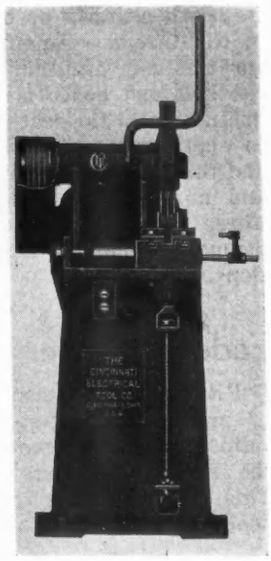
Tuthill Oil Pumps

ANNOUNCEMENT has just been made of the new ball-bearing Model CP oil pumps recently perfected by the Tuthill Pump Co., Chicago, Ill., primarily intended for hydraulic applications but also suitable for handling all lubricating liquids. The new pumps are of the rotary, internal gear, positive delivery type with improved stuffing box and the ball-bearing feature incorporated, and are built to handle pressures up to 200 lb. per sq. in. on liquids with fair lubricating qualities. Four sizes are available ranging in capacity from 2 g.p.m. at 300 r.p.m. to 40 g.p.m. at 1200 r.p.m.

Constructional features include ball-bearings to absorb the thrust and radial loads of the rotor, compactness, and a new standard mounting design, primarily arranged for end mounting with an optional bracket for users desiring foot type of mounting. The end type of mounting makes it convenient for the designer to incorporate the pump into his machine inconspicuously and with a minimum of space.

Cincinnati Cut-Off Machine

THE Cincinnati Electrical Tool Co. (Division of the R. K. LeBlond Machine Tool Co.), Cincinnati, Ohio, has just announced a new high-speed cut-off machine suitable for cutting steel alloys and non-ferrous metals such as brass, copper, aluminum, as well as fibrous materials of all kinds, in various sizes, angles and shapes up to 2¼ in. inclusive. This machine uses an abrasive wheel either 12 or 14 in. in diameter by 3/32-in. thick, and operates at a peripheral of approximately 15,000 or 16,000 surface feet per minute. The wheel is completely guarded with the exception of that portion necessary for the cutting operation, insuring protection to the operator at all times. Sparks and the abrasive dust are carried backward from the operator through an exhaust connection to a water pan within the pedestal.



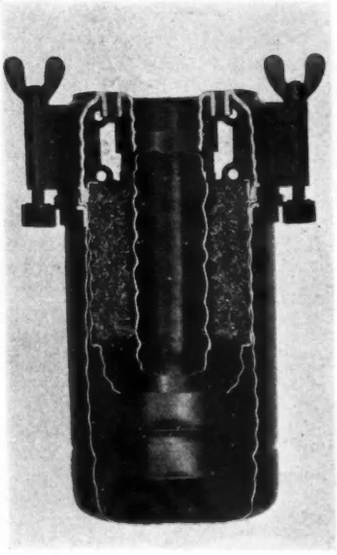
The machine is suitable for making cuts straight or angle up to 45 deg., the same vise being suitable for the various cuts. The vise is mounted and clamped to the base of the machine—the graduations on the table making angle cutting accurate and fast. The material to be cut is held in the vise by pressure on the foot lever, for both straight and angle cuts, and the abrasive wheel is moved into the work by means of a hand lever at the front of the machine. No water or other coolant is required when cutting various materials, there being no danger of drawing the temper of the material cut.

The machine is 60 in. high overall, and the floor space required is 43½ in. by 26 in. Weight,

1250 lb. Standard machines may be had for 220, 440 or 550 volts, 60 cycle, two or three phase, as well as direct current 115 or 230 volts. All motors are equipped with automatic starters with both overload and undervoltage protection and push-button control. The drive is by a 7½-hp., fully inclosed, ball-bearing motor, operating at a speed of 3600 r.p.m. with Vee belts from the motor to spindle which carries the cutting wheel and which is also ball-bearing equipped.

AC Oil Cleaner

AN improved air cleaner for buses, trucks and heavy-duty industrial engines has been introduced by the AC Spark Plug Co. It is a three-stage cleaner. The first stage of cleaning consists in taking in air through a stack or chimney on top of the cleaner, the intake being located high up under the hood, or in the case of a farm tractor, several feet above the engine, where the air is relatively pure.



The second stage of cleaning consists in causing the dust in the air to impinge on the surface of a supply of oil in the bottom of the cleaner as the air suddenly reverses its direction of motion. Laboratory tests are said to show that nearly all of the dust entering the cleaner is collected in the oil. The oil supply is said to be retained in the cleaner, it being impossible for it to be drawn into the carburetor at any rate of air flow.

The final stage of cleaning consists in passing the air, en route to the carburetor, through oil-wetted copper mesh to which the dust particles adhere. This catches dust which succeeds in getting by the second stage.

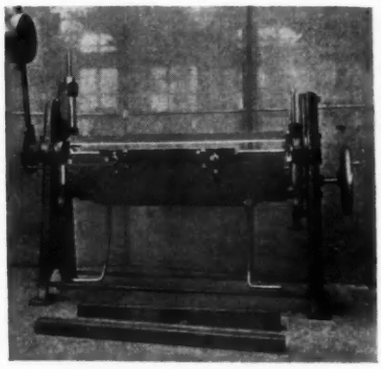
The device will hold several pounds of dust before a choking effect warns the operator that cleaning and reoiling are necessary.

Schatz Universal Forming Machine

THE universal brake, rounding and box-forming machine, offered by the Schatz Mfg. Co., Poughkeepsie, N. Y., is a sheet metal and plate-bending machine, made for hand or power drive

NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools

in widths from 40 in. to 20 ft. and for plate thicknesses from the thinnest to 1⅛ in. thick. It can be had with or without swing-out top clamping bar, the latter being preferable for making closed forms, trays, boxes, tanks, etc., from one sheet of material.



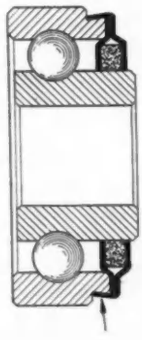
Aside from the swing-out top bar feature, other important features include high adjustment of the top clamping bar, which, on the largest power machine, goes to 28½ in., and the lowering of the bottom clamping bar and folding bar (apron) as much as 11¾ in. The high upward adjustment of the top bar permits the use of high angle forming blades, having a usable height of at least 80 per cent of the top bar adjustment, for the forming of narrow channels, trays with high walls, besides the accommodation of bulky work between the bars.

The lowering of the bottom clamping bar and folding bar is resorted to when bends with a radius are made. The maximum radius that can be bent is equivalent to the maximum downward adjustment of the lower bars. These adjustments are made according to conveniently located graduated scales. The wide opening between the bars permits the introduction of round or rectangular mandrels, the former for tube forming or rounding and the latter for making smaller closed forms than can be made over the larger standard top bar.

Due to a patented system of attaching, the blades in the top bar are instantaneously interchanged without the use of screws or bolts of any kind. The blade in the folding bar is slotted for quick change and is reversible for folding or bending thick and thin plates.

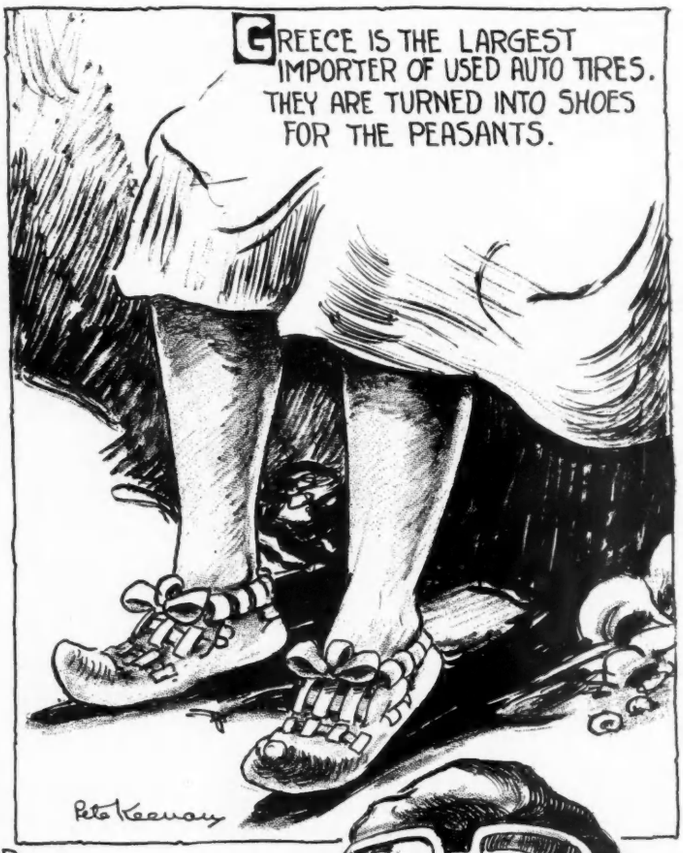
Correction

In the Norma Greaseal bearing, illustrated here, the felt retainer is held in place by being crimped to the outer race as shown. This was not clearly brought out in the illustration published in our Jan. 17 issue



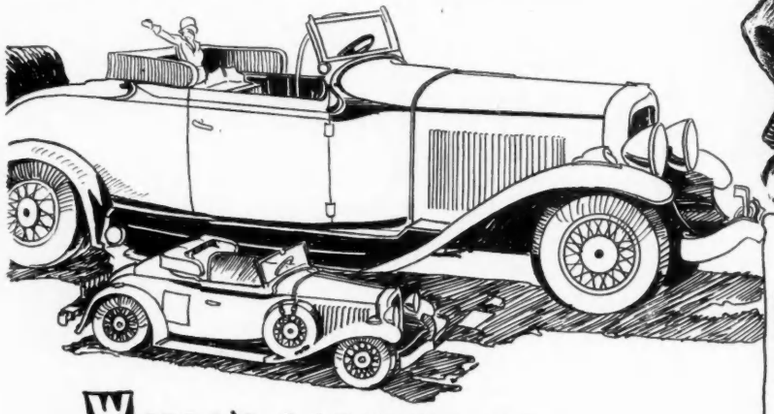
Automotive Oddities—By Pete Keenan

D.H. THOMAS LOST CONTROL OF HIS CAR AND WAS THROWN THROUGH A GROCERS WINDOW INTO A BARREL OF PICKLES. HE GOT 50 DAYS IN JAIL FOR BEING PICKLED. *Atlantic City, Jan 24th 1931.*



GREECE IS THE LARGEST IMPORTER OF USED AUTO TIRES. THEY ARE TURNED INTO SHOES FOR THE PEASANTS.

MOTORISTS OF MACEIO, BRAZIL, WHO ARE ARRESTED FOR TRAFFIC VIOLATIONS MAY HAVE THEIR FINES REDUCED 50% IF THEY ARE USING ALCOHOL MOTOR FUEL (*A HOME PRODUCT*) INSTEAD OF GASOLINE.



WORLD'S LARGEST CAR.

IT IS 15 TIMES THE SIZE OF THE NORMAL CAR. IT TOOK 60 MEN THREE MONTHS TO COMPLETE. *Built by Studebaker Corp. 1930.*

CAPT. WILLIAM BARKER, CANADIAN WAR ACE, WITH 52 GERMAN PLANES TO HIS CREDIT, WAS KILLED WHEN HE CRASHED TESTING A NON-CRASHABLE PLANE. *Ottawa, 1930.*

NEWS OF THE INDUSTRY

Sees Racing Plane Costing Huge Sum

U. S. Schneider Cup Entry Expense Would Near Three Million

WASHINGTON, Feb. 11—Expenditure of $1,500,000 annually for at least two years would be necessary for a research and experimental program to develop a seaplane to favorably compete for the Schneider cup, according to David S. Ingalls, assistant Secretary of the Navy for aeronautics. The development of the unsuccessful Mercury required about $170,000 of Navy funds plus a large amount raised by Lt. Alford J. Williams.

Competitive research work among engine manufacturers would undoubtedly be of great assistance in bringing the project to a successful termination and similar competition between aerodynamics specialists would aid in deciding whether to continue concentrating on present types of racing planes or of attempting to evolve new designs.

Yellow Coach Reports Profit

PONTIAC, MICH., Feb. 12—"Net sales of Yellow Truck & Coach Mfg. Co. for the year ended Dec. 31, 1930, were $42,725,226," Paul W. Seiler, president, announced today. "Net profit after provision for depreciation was $1,115,415. In the year 1929 net profit before adjustments applicable to prior years amounted to $1,177,799, and after adjustments applicable to prior years of $750,167, the net profit amounted to $1,927,966."

Toledo Show Opens

TOLEDO, Feb. 10—With an attendance of more than 10,000 persons each of the first two nights the twenty-third annual automobile show has eclipsed previous records for public interest. The show is sponsored by the Toledo Automotive Trades Association.

Mohawk Reports Loss

CHICAGO, Feb. 12—Mohawk Rubber Co. for the year ending Dec. 31 reports net loss of $668,698 after all charges and write-offs as compared with net profit of $216,327 in 1929.

The News Trailer

By Herbert Hosking

H. H. **Curtice**, president of AC, and H. L. **Weckler, Buick** works manager, have been elected pres. and v. p. of **Flint** Mfrs. Assn. * * * **Montevideo,** Uruguay, has begun excavations for a **"motor city"** . . . stadium, track, exhibit grounds, etc. * * * the **Army Air Corps** will be asked to test a combination airplane-dirigible by the **House** Military Affairs Committee, reporting bill to authorize $50,000 for construction . . . Geo. W. **Hardin, Greeneville,** Tenn., inventor * * * **Plymouth** has been permitted to register its trade mark "Chrysler Plymouth" in connection with the radiator emblem of a sailing vessel at sea . . . **Court** of Customs and Patents appeals **reversed** former decision of registry office that Plymouth was merely geographical name (unregisterable) and had come to be associated with certain qualities of **staunchness,** etc. . . . Plymouth is **proud** * * * J. S. **Mitchell,** manager for the **St. Louis W-O** distributor, says his organization **sold** 257 cars at retail and 493 at wholesale in two days . . . only 47 trade-ins taken . . . record for 2 days' sales volume by single outlet claimed . . . any competitors? * * * **Toronto** officials and taxicab **operators** continue feud . . . cab drivers will not be photographed and fingerprinted . . . not now, at least, **according** to the latest decision in round two . . . compulsory liability insurance is another bone of dissension * * * 55 per cent of **Washington's** population uses automotive transportation to get in and out of the business district daily, says the **Erskine Bureau** at Harvard, Miller **McClintock** directing . . . **Chicago** gets low score with 19 per cent average, **San Francisco** and **Boston** higher, with **Kansas City** at 41 per cent . . . in K. C. study shows that 1.8 persons are carried inbound by each car in **morning** traffic and 1.2 **persons** per car outbound at night . . . we hereby speak out for the underprivileged .6 persons who have to **walk** home at night * * * G. M. plans an aggressive **Canadian** advertising campaign this year . . . says **H. M. Ireland,** adv. man. * * * Marquis W. Converse, president of the rubber company bearing his name, was found dead in his automobile Feb. 9, in Boston, Mass.

Ask No Change of Appraisal Basis

Canadian Car Importers Hit at Move of Dominion Manufacturers

MONTREAL, Feb. 11—In the past few days a number of dispatches from Ottawa have appeared in the newspapers regarding the application of the Canadian automobile manufacturers and assemblers to the Government for a change in the basis of appraising imported motor cars for duty purposes, by way of lowering allowable discounts. The Canadian Automobile Importers' Association, in a statement issued last week, points out that an erroneous inference has very generally been drawn from these dispatches.

The Association wishes to make it clear to the public that the practice of the manufacturers as regards discounts to distributors and dealers is identical in both the United States and Canada. The Canadian importer receives no greater discounts from American factories than similar dealers in Canada selling Canadian cars.

Willys Lucas Sales Increase

TOLEDO, Feb. 10—Willys-Overland registrations of new cars in Lucas County in which Toledo is located increased 30 per cent over January last year. Of 318 new cars registered 68, or 21.5 per cent, were Willys-Overland products.

Motor Wheel Declares

DETROIT, Feb. 10—Directors of Motor Wheel Corp. have declared quarterly dividend of 37½ cents, placing the stock on a $1.50 annual dividend basis, against $3 previously paid.

Ex-Cell-O Orders Increase

DETROIT, Feb. 11—Orders received by Ex-Cell-O Aircraft & Tool Co. during the first 10 days of February were 183 per cent greater than corresponding period in January.

R. S. Perry Leaves Hudson

DETROIT, Feb. 12—R. S. Perry, general planning manager of the Hudson Motor Car Co., has resigned, and is, at present, in Florida on vacation.

Only Ten States Give Reciprocity on Trucks

Conference Committee Cites Resulting Hardships

NEW YORK, Feb. 11—While most states grant complete reciprocity for passenger cars, only 10 allow this privilege for motor trucks, according to R. S. Armstrong, secretary of the Motor Vehicle Conference Committee. In 26 states complete reciprocity is given to trucks not engaged in public service, and some other state motor vehicle commissioners have entered into "treaties" with neighboring states giving a greater degree of reciprocity than that technically provided in the language of the state laws.

This condition results in extreme hardship on trucks operating in interstate commerce, as the truck registration taxes are in most cases higher by a considerable amount than passenger car fees, and the double registration required adds considerably to the cost of this type of business. Pointing out that registration was originally intended for identification, Mr. Armstrong says, "Requirement of more than one license plate from more than one state for one vehicle is not necessary for police supervision and is unfair as a taxation device."

Indian Reports Loss

NEW YORK, Feb. 11—Indian Motocycle Co. reports net loss for the year 1930 of $774,460, as compared with a loss for the previous year of $359,427. E. Paul duPont, president, who took control in May, 1930, says that most of the loss took place prior to that time or is directly attributable to conditions existing then. Under his management, the cash position of the company has been improved so that today the company has current assets of $1,157,474, as against current liabilities of $358,079. Raw material inventory has been reduced, morale has been built up, and the company has been discounting all trade bills for a considerable time.

Ex-Cell-O Promotes Huber

DETROIT, Feb. 12—Phil Huber has been promoted to be vice-president and assistant general manager of the Ex-Cell-O Aircraft & Tool Co. Mr. Huber has been factory manager of the company for two years.

The Ex-Cell-O organization held a sales convention in Detroit, Feb. 5-7. Thirty sales executives and salesmen from branch offices attended.

Ajax Loses N. Y. Listing

NEW YORK, Feb. 11—Ajax Rubber Co. stock was stricken from the New York Stock Exchange listings today. The stock was formerly a popular trading vehicle. Failure to maintain a transfer office here was given as the reason.

Bastian Reports Profit

CHICAGO, Feb. 10—Bastian-Blessing Co. for the year ended Nov. 30, 1930, reports net profit of $287,892, after all charges and taxes, equal to $2.50 a share on 115,000 shares of no par common stock, against $689,325 net, or $5.99 a share, earned in the last preceding fiscal year.

Vehicles Support New Zealand

WASHINGTON, Feb. 11—The importance of the automobile as a contributor to the governmental revenue of a country is strikingly illustrated in New Zealand where revenue derived from automotive sources is now one of the government's important fiscal supports, the Automotive Division, Department of Commerce, is advised by Trade Commissioner J. B. Foster, Wellington. According to a recent report of the North & South Island Motor Unions, total motor taxation during 1929 amounted to £3,094,975 ($15,010,628), while the revenue derived from the income tax during the same year was £3,310,877 ($16,057,753).

Petroleum Imports Rise

NEW YORK, Feb. 11—Average daily petroleum imports for the week ended Feb. 7 are placed at 332,286 bbl., as compared with 205,286 bbl. a day for the previous week, and 267,774 bbl. daily for the month of January, according to the American Petroleum Institute.

Crude runs to stills reported by 94.6 per cent of the estimated capacity were 2,139,400 bbl. daily, and these companies had in storage at the end of the week, 42,457,000 bbl. of gasoline. These same companies manufactured 2,691,000 bbl. of cracked gasoline during the week.

Service Association Meets

NEW YORK, Feb. 13—The Automotive Service Association met here this evening at the Westinghouse Lighting Institute for its regular monthly meeting. The subject of the evening was headlight adjusting, and was discussed by Westinghouse engineers, cooperating with members of the association. The next meeting will be the annual banquet of the association, and will be held on March 12.

Deere Gets Engine Shipment

WILLIAMSPORT, PA., Feb. 11—Several hundred Lycoming four-cylinder engines have been shipped by the Lycoming Manufacturing Co. in the last week to the John Deere Harvesting Co. for use on their harvesting combines in 1931.

Slomer Moves Quarters

SPRINGFIELD, VT., Feb. 10—W. F. Slomer, general sales and service manager of the Fellows Gear Shaper Co., has moved his Detroit headquarters from 1149 Book Bldg. to 616 Fisher Bldg., according to an announcement from the company.

Vehicle Fatalities Increase Sharply

Death Rate Per 1000 Population Gains .5

WASHINGTON, Feb. 12—The Department of Commerce announces that during the four weeks ending Jan. 24, 1931, 81 large cities in the United States reported 736 deaths from automobile accidents. This number compares with 664 deaths during the four weeks ending Jan. 25, 1930.

Considering by four-week periods since January, 1929, total deaths from automobile accidents for 81 cities, regardless of place of accident, the lowest total (471) appears for the four-week period ending Feb. 23, 1929, and the highest (850) for the four-week period ending Nov. 2, 1929.

For the 52 week periods ending Jan. 24, 1931, and Jan 25, 1930, the totals for the 81 cities were respectively 8897 and 8565, which indicate a recent rate of 25.5 per 100,000 population as against an earlier rate of 25.0, or an increase of 2 per cent in the rate during the year.

Five cities reported no deaths from automobile accidents for the last four weeks, while nine cities reported no deaths from automobile accidents for the corresponding period of 1929.

Michigan Tube Reports

DETROIT, Feb. 11—Michigan Steel Tube Products Co. reports for year ended Dec. 31 net profit of $41,377 after all charges and Federal taxes, equal to 41 cents a share on 100,000 shares no par common outstanding, comparing with net profit of $345,212, or $3.45 a share, during the previous year. Current assets as of Dec. 31 were reported to be $519,242 against current liabilities of $101,156, a ratio of 5.13 to 1.

Ingersoll Business Improves

CHICAGO, Feb. 11—New orders from agricultural and automotive firms, which will increase February business noticeably above January and December, have just been received by the Ingersoll Steel & Disc Co., Galesburg, Ill., a division of the Borg-Warner Corp. January business was 25 per cent above that of December. This statement was issued today by C. S. Davis, president of the parent company.

Courtney Opens Office

NEW YORK, Feb. 11—Captain Frank T. Courtney, who made an unsuccessful attempt to fly the Atlantic in an east-to-west direction, and who for the past two years has been associated with Curtiss-Wright Corp. as technical adviser, has opened an office as consulting engineer in aviation matters in the General Motors Building here.

Ford Increases Dealer Discounts

Flat Deduction of 22 Per Cent Now Rules

DETROIT, Feb. 9—Effective Feb. 6, Ford dealer discounts were increased from the 17½-21 per cent sliding scale to a flat 22 per cent discount. Dealers in various parts of the country were told this, but no official statement has been released by the Ford Motor Co.

The "average dealer" (one who sells 142 cars and trucks per year) will gross $16,401, instead of $13,794, the profit under the sliding scale which the new discount replaces. This is computed on an average list price of $525 per car and truck.

With the sliding scale, dealers were forced to sell approximately 500 cars to get a 20 per cent discount, the original discount established when the Model A was introduced in December, 1927. The lowest Ford discount was 15 per cent, during a period of Model T production.

The small dealer will benefit most under the new 22 per cent discount. Dealers selling less than the average (142 units) had been getting a 19 per cent discount up to Feb. 6, 1931.

Since July, Ford's percentage of new car sales has been dropping steadily. The following table shows this trend:

Ford's Percentage of Total New Car Sales

July	42.3
August	38.0
September	37.4
October	36.9
November	35.4
December	31.0

In December, Chevrolet passenger car sales passed Ford car sales for the first time since August, 1928, when the former's registrations reached 31,609, and the latter's totaled 29,651. See table below.

Stinson to Enlarge Plant

DETROIT, Feb. 11—A $25,000 contract has been awarded for the erection of a two-story extension to the Stinson Aircraft Wayne, Mich., plant.

U. S. Rubber Names Harkins

DETROIT, Feb. 10—The appointment of Frank S. Harkins as manager of advertising and sales promotion of U. S. Rubber Co.'s tire department has been announced by J. F. O'Shaughnessy, general manager of the department, at Detroit.

Mr. Harkins formerly served as Detroit district manager and later as sales promotion manager, which position he will retain in addition to his duties as advertising manager. Previous to joining the U. S. Rubber, Mr. Harkins was connected with B. F. Goodrich Rubber Co. in Akron as manager of national advertising and later as manager of its San Francisco branch.

Mr. Harkins succeeds Mr. G. N. Walker, who left U. S. Rubber Co.

Get European Order

CHICAGO, Feb. 11—Mechanics Universal Joint Co. of Rockford, Ill., a division of Borg-Warner Corp., has recently negotiated a contract for universal joints with one of the largest European car manufacturers, it was announced today by C. S. Davis, president of Borg-Warner Corp. February shipments on the new order will amount to 5000 universal joints, and total shipments for the coming year are estimated at approximately 35,000 units.

White Business Improves

CLEVELAND, Feb. 11 — According to officials of the White Motor Co., the first 10 days of February showed an increase over the same period of 1930 and business has been better than any time since last October. About 12 to 14 per cent of their recent business was in buses.

Col. Castle Made Chairman

CHICAGO, Feb. 10—Col. B. F. Castle, formerly president of Great Lakes Aircraft Corp., has been elected chairman of the board of the corporation and will retire from active management to devote his time to other business interests.

Study Reveals Foreign Holdings

American Makers Invest Nearly $200,000,000

WASHINGTON, Feb. 11—American manufacturers of automotive vehicles have $79,210,000 invested in 30 European branch plants, according to a report on "American Branch Factories Abroad," transmitted to the U. S. Senate by Robert P. Lamont, Secretary of Commerce. Six plants in Canada and six in Latin America, representing invested American capital to the amounts of $56,097,000 and $31,122 respectively, bring to American investment in foreign automotive vehicle manufacturing plants to an amount in the neighborhood of $166,429,000, which does not include a number of plants found in other classifications.

American manufacturers are interested in 13 European automobile accessory plants to the extent of $4,174,000, the report shows, while American accessory plants in Canada, to the number of 32, represent an investment of $11,117,000.

The total figure invested in motor vehicle and accessory plants abroad by American manufacturers is $181,720,000, with the possibility that the actual figure would near $200,000,000 with the inclusion of a number of plants otherwise classified.

S.A.E. Confirms Geschelin

PHILADELPHIA, Feb. 11 — Joseph Geschelin, engineering editor of *Automotive Industries*, has been confirmed by the president and council of the Society of Automotive Engineers to serve another term as chairman of the Papers-Meetings Committee of the Production Activity Division.

Dodge Deliveries Continue Gain

DETROIT, Feb. 11—The week ending Feb. 7 is the fifth consecutive week this year that Dodge retail deliveries have exceeded deliveries during the corresponding week last year.

How Model A Discount Changes Have Affected Ford Dealer's Gross Profits —From March Automobile Trade Journal

(Figured on the basis of an average list price of $525)

Number of Cars and Trucks Sold in One Year	Flat 20% Discount Effective from Introduction of Model A to Nov., 1929	Flat 17½% Discount Effective from Nov., 1929, to May, 1930	Sliding Scale 1-50 cars ....17½% 51-100 cars...18% 101-150 cars..19% 151-500 cars..20% 501-up cars..21% Effective May, 1930, to Jan., 1931	Sliding Scale 1-25 cars ....17½% 26-75 cars...18% 76-125 cars...19% 126-400 cars..20% 401-up cars..21% Effective Jan., 1931, to Feb. 6, 1931	Flat 22% Discount Effective Feb. 6, 1931
25	$2,625.00	$2,296.87	$2,296.87	$2,296.87	$2,887.50
50	5,250.00	4,593.75	4,593.75	4,659.37	5,775.00
75	7,875.00	6,890.62	6,956.25	7,021.87	8,662.50
100	10,500.00	9,187.50	9,318.75	9,515.62	11,550.00
125	13,125.00	11,484.37	11,812.50	12,009.37	14,437.50
142 average dealer*	**14,910.00**	**13,046.25**	**13,508.25**	**13,794.37**	**16,401.00**
150	15,750.00	13,781.25	14,306.25	14,634.37	17,325.00
400	42,000.00	36,750.00	40,556.25	40,884.37	46,200.00
500	52,500.00	45,937.50	51,056.25	51,909.37	57,750.00
600	63,000.00	55,125.00	62,081.25	62,934.37	69,300.00
1,000	105,000.00	91,875.00	106,181.25	107,034.37	115,500.00

*Registrations of Model A cars and trucks averaged about 142 per Ford dealer in 1930.

Heminway Resigns; Mathis Returns to Europe; New Plane

M. L. Heminway Resigns

NEW YORK, Feb. 11—M. L. Heminway announces his retirement, to take effect March 1, as managing director of the Motor and Equipment Association, in which capacity he has served the organization for 12 years.

After serving as secretary of the War Service Committee of the Rubber Industry during the war, Mr. Heminway assumed the management of the old Motor and Accessory Manufacturers Association.

M. L. Heminway

He has served as president of the Trade Association Executives of New York City, as well as president of the American Trade Association Executives. He is vice-chairman of the Motor Vehicle Conference Committee which he assisted in organizing. He is a member of the Society of Automotive Engineers, and at one time served upon its Finance Committee.

He is also a past director of the American Automobile Association. No announcement of future plans have been made by Mr. Heminway.

William D. Bartlett Dies

CLEVELAND, Feb. 9—William D. Bartlett, senior vice-president of the Thompson Products Co., died at St. Luke's Hospital here recently. He, together with J. A. Krider and Chas. E. Thompson, organized the business under the name of the Electric Welding Products Co. in 1902. He had been in charge of Thompson manufacturing operations for many years and was responsible for several developments. He is survived by a widow and four brothers.

Frank E. Widman Dies

DETROIT, Feb. 9 — Frank E. Widman, coorganizer with his father of the J. C. Widman Co., for the manufacture of automobile bodies, which later became part of the Murray Body Co., died recently after a two months' illness. He was 54 years old.

Recently Mr. Widman and his brother Arthur had been distributors for automobile body parts and supplies.

To Try Compulsory Insurance

VICTORIA, B. C., Feb. 9—Compulsory automobile insurance will be introduced into British Columbia a year hence under the plans approved by the government. Legislation compelling all car owners to insure against damage to the public will be introduced at the Legislature 1932 session, it has been learned. The government is waiting only to see the outcome of an investigation which Ontario is carrying on regarding existing insurance rates. The British Columbia authorities feel that compulsory insurance should not be introduced until the public is assured of receiving the lowest possible rates. The Ontario inquiry will estimate whether the existing rates can be reduced or not when the revenue of insurance companies is increased by a universal insurance. It is not intended to force the owners to insure against damage to their own cars, but to other cars and property.

Mathis Returns to Europe

E. E. C. Mathis, president of the French company manufacturing cars bearing his name, and also president of the American company planning to produce the same car in this country, sailed last week on the S. S. Ile de France to return to Europe. He has been in this country since shortly before the New York show, perfecting plans for the production of the car in this country, and to supervise its first official showing at the national shows. He is accompanied by Mrs. Mathis.

Also sailing on the Ile de France were George W. Borg, chairman of the board of directors of Borg Warner Co., and Mrs. Borg; Frank Love, president of the United Aircraft Export Co., and Mrs. Love; and Mrs. F. J. Haynes, wife of the chairman of the executive board of the H. H. Franklin Mfg. Co., and her daughter, Mrs. David Burgess.

Brazilian Sales Improve

WASHINGTON, Feb. 11—An active business in low-priced cars in Brazil is noted in a cable to the Automotive Division, Bureau of Foreign and Domestic Commerce. The activity is attributed to seasonal improvement and price reductions. Sales of medium and high-priced cars, however, are behind the seasonal level. In Sao Paulo the market has definitely improved, and used car stocks, and most new car stock have been reduced.

Dardelet Licenses Two

NEW YORK, Feb. 12—Licenses to manufacture the Dardelet self-locking screw thread have been granted to W. L. Brubaker and Bros. Co., Millersburg, Pa., and the William H. Ottemiller Co., York, Pa., according to an announcement from the Dardelet Threadlock Corp.

Plan to Release Company

DETROIT, Feb. 14—A plan for releasing the company from receivership was to be submitted to the stockholders of Hutto Engineering Co., Detroit, at a meeting to be held Feb. 13.

Curtiss-Wright Jr. Described

NEW YORK, Feb. 10—Curtiss-Wright Corp. has announced the details of its Junior, a private airplane. The new plane, which is the pusher type, is priced at $1,490 and with an estimated mileage of 25 miles per gallon of gasoline it is thought that it will be an economical plane both for initial cost and for operation.

This plane, which is the initial entry of Curtiss-Wright into the small, private plane field, is of the pusher type, in order to afford better vision for the operator and to eliminate danger from the propeller when the ship is on the ground. The plane has a landing speed of 28 m.p.h., a top speed of 80 m.p.h. and a cruising speed of about 70 m.p.h. The fuselage is constructed of chrome-molybdenum alloy steel tubing welded together. A picture of the new plane appeared in *Automotive Industries* for Jan. 24.

Oliver Program Progressing

CHICAGO, Feb. 9—The Oliver Farm Equipment Co.'s plant operations are going forward at a conservative pace under its new management. Some preparation is being made for the smaller spring planting implements, but production is reported to be confined chiefly to filling the company's $12,000,000 Russian order, the bulk of which consists of 5000 tractors and 1500 combines.

Buick N. Y. Sales Set Record

NEW YORK, Feb. 10—Sales in the New York zone of the Buick Motor Co. during January totaled 903 cars as compared with 792 cars for the corresponding month in 1930, or an increase of 14 per cent. This is the best January business the local Buick branch has done in 5 years and the second best that it has done in the 23 years of its history.

Argentina Sales Are Dull

WASHINGTON, Feb. 11—January automobile sales in Argentina for all price classes decreased, according to a cable to the Automotive Division, Bureau of Foreign and Domestic Commerce. Truck sales, especially in the interior of the country, were discouraging, and sales of parts were more than seasonally dull, the report stated.

Lycoming Begins Marine Output

WILLIAMSPORT, PA., Feb. 11—Production of 1931 marine engines is now under way by Lycoming Mfg. Co. and indications are that production and sales will show an increase over the previous year, W. H. Beal, president, said today.

Weekly Production Increases; Adelbert B. Swetland Dies

Rumely Merger Approved

CHICAGO, Feb. 9—Formation of Advance-Rumely Corp. through the merger of Advance-Rumely Co. and the Indiana Farm Machinery Corp. has been approved by directors of both of the latter companies.

The agreement provides that the newly formed Advance-Rumely Corp. have an authorized capital of 500,000 shares of no par common stock, of which 277,500 shares will be exchanged for the preferred and common stock of the present Advance-Rumely company in the ratio of one-fifth of a share of the new common for each of the present $100 par common and two shares for each share of the present $100 par preferred stock.

Two Speed Records Fall

PHILADELPHIA, Feb. 9—After he had set a new world's land speed record on Feb. 5, at Daytona Beach, Captain Malcolm Campbell, on the following day, drove an English Austin Seven over the beach course for a new speed mark of 94.031 m.p.h., for cars of less than 45 in. displacement.

On the same day, C. L. Cummins, Indianapolis, made four runs over the course in a Diesel engined chassis. His best speed for the mile was at the rate of 97.905 m.p.h., considerably bettering the mark he made last year. He will be granted a certificate of performance by the American Automobile Association.

Klaxon Has New Product

ANDERSON, IND., Feb. 12—Emblem horns, so arranged that organization emblems may be mounted by the dealer, are now being placed on the market by the Klaxon Co. Twenty-nine interchangeable designs are being made.

Illinois Revenue Apportioned

SPRINGFIELD, ILL., Feb. 9—Receipts from the Illinois gasoline tax collection last year reached $28,612,-268.66, which after refunds on nontaxable gas of $949,535.24, left a net of $27,582,579.16, according to G. F. Kinney, state director of finance. The state will receive about $18,388,386.10 for hard roads and counties will get $9,194,193.05, on basis of motor license fees paid in each county. The gas tax collection peak was reached in July and August with $2,888,125.70 and $2,831,760.51 respectively.

Color Black Wanes

NEW YORK, Feb. 12—Continued decline in the popularity of the color black as an automobile finish, with blue creeping into a position of equality with it, is reported in the February *Automobile Color Index* of the Duco Color Advisory Service.

During January, 1931, the *Index* positions of the six leading color families, with the index number, were as follows: First, blue, 136; second, black, 136; third, maroon, 114; fourth, green, 92; fifth, brown, 68; and sixth, gray, 36.

Aluminum Industries Adding

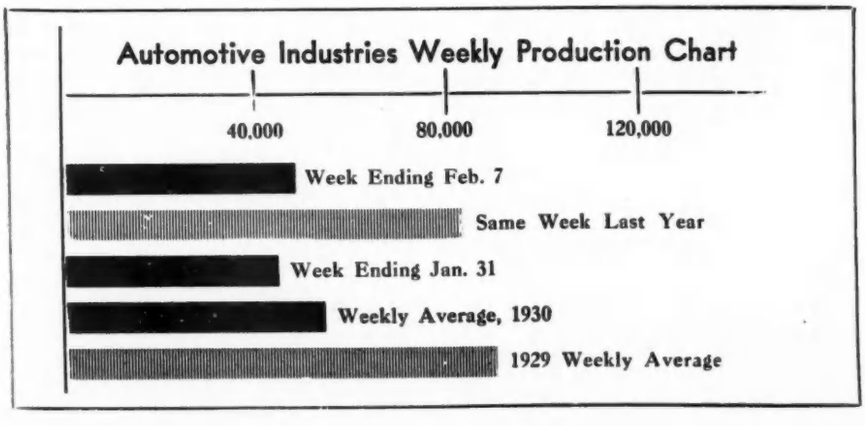
CINCINNATI, Feb. 10 — Expansion of the plant at the St. Cloud division of Aluminum Industries, Inc., at St. Cloud, Minn., and the installation of $30,000 worth of new valve equipment, made necessary chiefly as the result of contracts with Chrysler Motors and the Lycoming Mfg. Co., for Permite diachrome valves, is announced by officials of the parent company in Cincinnati.

Trico Reports Profit

CHICAGO, Feb. 12—Trico Products Corp. and subsidiaries in the year ended Dec. 3 had net profit of $1,908,415, after all charges, equal to $5.09 a share against $2,249,948 or $6.86 a share in 1929.

Modine Reports Profit

CHICAGO, Feb. 9—Modine Mfg. Co. for the year ended Dec. 31 reports net profit of $258,113, equal to $3.56 a share on 100,449 shares outstanding, compared with $882,233, or $8.82 a share, in the previous year.



Adelbert B. Swetland

NEW YORK, Feb. 9—Adelbert B. Swetland, former business manager of *Automotive Industries*, and other publications of the United Business Publishers, Inc., died Feb. 6, in Buffalo, at the age of 66.

His connection with business publications began in 1890, when he left his birthplace, Chautauqua, N. Y., and associated himself with his brother, the late Horace M. Swetland in the Powers Publishing Co. In 1903 his association with the Class Journal Co., former publisher of *Automotive Industries*, and now a unit of the Chilton Class Journal Co. and the U. B. P., began.

In 1924 he retired from his United Business Publishers interests and purchased, with associates, the *Furniture Index*. Retiring later from this, he devoted himself to extensive real estate and livestock holdings.

St. Louis Show Closes

ST. LOUIS, Feb. 9—The annual St. Louis Auto Show closed Feb. 7 with a total attendance for the week of 136,597. While the attendance was not unusual, dealers saw in the active buying interest of the spectators a trend toward renewed activity.

Records for a single day's attendance were broken on Tuesday when 38,351 persons visited the show. The number included about 20,000 school children, who were admitted free.

Odenkirk Heads New Company

CLEVELAND, Feb. 11—Formation of the Odenkirk Motor Wheel Corp. to manufacture an automobile wheel of new design was announced here today by H. C. Odenkirk, who will head the new company. The incorporators of the company are all Clevelanders, and the factory will be located here. The wheel to be manufactured is equipped with a split rim, designed to permit rapid changing of tires on automobiles and trucks.

S. C. Registers 140,000

COLUMBIA, S. C., Feb. 9—Sales of South Carolina motor vehicle license tags for 1931 to date total more than $2,000,000, according to an announcement by W. V. Sutherland of the State Highway Department. More than 140,000 sets of tags have been sold, he said.

Aluminum Industries Declares

CINCINNATI, Feb. 12—Directors of Aluminum Industries, Inc., at the regular meeting Feb. 2, declared the regular quarterly dividend of 37½ cents, payable March 16 to stock of record Feb. 28.

Men of the Industry and What They Are Doing

Show Managers Elect

Major Robert E. Lee of St. Louis was reelected president of the National Association of Automobile Show and Association Managers at the annual meeting held in Chicago during Chicago automobile show. Other officers reelected included Herbert Buckman of Cleveland, vice-president; H. H. Shuart of Detroit, director, and Leon F. Banigan, editor of *Motor World Wholesale*, Philadelphia, secretary. Claude E. Holgate, Newark, N. J., was elected to the Board of Directors, taking the place of John E. Raine of Baltimore.

The association voted in favor of holding their annual meeting in Toronto in the summer of 1931, during the Canadian National Exhibition.

Worthington Names Beaver

Harry C. Beaver, whose resignation as executive vice-president of Rolls-Royce of America, Inc., was announced in *Automotive Industries* last week, has been named vice-president of the Worthington Pump and Machinery Corp., Harrison, N. J. E. E. Yake, of the latter company, was advanced to vice-president in charge of engineering and manufacturing at the same time.

U. S. Rubber Names Krause

F. L. Krause has been appointed manager of the Tire Service Dept., United States Rubber Co., according to announcement by L. M. Simpson, general sales manager of the tire department at Detroit.

The Tire Service Dept. is a reorganization of the former technical service division, which was headed by A. K. Dill, now director of sales of bicycle tires, sundries and airplane tires. Prior to his appointment as head of the new department Mr. Krause held the position of assistant to Mr. Dill.

E. N. Hardy Resigns

E. N. Hardy, manager of the St. Louis branch of the Ford Motor Co., has resigned. Mr. Hardy has been with the Ford Co. for 17 years in various capacities. He has no plans for the future and will not attempt any business connection until after a two months' vacation. His successor has not been named.

White Promotes E. W. Stock

E. W. Stock has been promoted to the post of general service manager of the White Co., with headquarters in Cleveland, according to an announcement from the office of George F. Russell, vice-president and sales manager. He replaces H. C. Marble who has resigned to take over other duties.

McDarby on Western Trip

N. E. McDarby, vice-president in charge of sales for Auburn, left here last week for a three weeks' trip over the West Coast territory. He will attend the automobile shows at San Francisco, Seattle and Denver.

Harriman Names Hansen

Harry M. Hansen, who has been identified with the sale of Reo trucks in Milwaukee and Wisconsin for 12 years, has been appointed sales manager for the Harriman Universal Joint Co.

Canada Lists Aero Interests

MONTREAL, Feb. 9—Canada has 309 private air pilots, 402 commercial pilots, 370 air engineers and 495 aircraft, according to the quarterly liason letter issued by the Civil Aviation Branch of the Department of National Defense. There are also 69 air-harbors in Canada. During 1930 there were 300 pilot licenses issued, 175 private and 125 commercial. Licenses were also issued to 61 air engineers, 124 aircraft and 10 air harbors.

Ethyl to Advertise More

NEW YORK, Feb. 11—The Ethyl Gasoline Corp. announces an increase of 30 per cent in its advertising budget for the current year.

The advertising program of the corporation, aggregating about $2,000,000, involves the use of general magazines, women's magazines, scientific magazines, class magazines, business magazines, technical magazines, farm magazines, and trade magazines.

Lodge Plants in Canada

WINDSOR, ONT., Feb. 9—Announcement has been made of the establishing in Walkerville, Ont., of a new industry, the Lodge Motor Co. of Detroit. The new concern is subsidiary of the Lodge Motor Co. of Detroit, and will manufacture marine engines. Factory space has been secured and machinery is now being placed. It is expected that the plant will be in operation in about 30 days and upward of 100 men will be employed.

Firestone Names Agency

NEW YORK, Feb. 9—Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, Ohio, has appointed Batten, Barton, Durstine & Osborn, Inc., New York, as his advertising agency.

'Motors Employees Benefit by Saving

Corporation Distributes Returns on Investments

NEW YORK, Feb. 9—General Motors Corp. is distributing to 20,009 of its employees who invested in the savings and investment fund class of 1925, a total of $8,706,937.04, consisting of $3,422,345.63 in cash and 149,388 shares of General Motors common stock. Employees of General Motors who invested $300 in the fund in 1925 thus receive a total of $1,054.16 consisting of $414.35 in cash and 18.09 shares of stock.

Employees are permitted to invest up to 20 per cent of their salary, not to exceed $300 in these funds to mature at the end of five years. The corporation adds fifty cents to the fund for each $1.00 the employees invest and the corporation's contribution is invested in common stock with the dividends reinvested in common stock. Seven classes have matured in the past, involving the payment of $69,955,547. The five unmatured classes now running represent a total of $82,544,634.

Class 4 Screw-Thread Fits May be Eliminated

PHILADELPHIA, Feb. 10—At a recent meeting of the Sectional Committee on Screw Threads of the A.S.A., announcement was made that after thorough considerations by gage and threading tool manufacturers, it had been found that the tolerances allowed in the manufacture of gages and in threading tools consume practically all of the tolerances allowed for Class 4 thread fits, leaving no provision for variation in the product.

The committee agreed that this class of thread fit is not practical for the production of parts on the interchangeable basis and that it can be used satisfactorily only in selective assembly. It was therefore voted that in the next report of the committee the Class 4 thread fit with tables be removed from the body of the report and placed in an appendix.

Publishes Revised Pamphlets

NEW YORK, Feb. 9—The Motor Vehicle Conference Committee has prepared the revisions of its pamphlets on Special Taxation for Motor Vehicles and State Restrictions on Motor Vehicle Sizes, Weights and Speeds, bringing them up to date as of Jan. 1 with the latest state law.

In addition to digesting the existing state laws, these pamphlets contain a general discussion of the motor vehicle taxation question, with recommendations for sound and equitable principles and views and recommendations of the committee with regard to size, weight and speed restrictions.

1930 New Registrations Dropped 32 Per Cent

Decrease is 16 Per Cent From Five-Year Average

PHILADELPHIA, Feb. 11—Final new passenger car registration figures show a total of 2,625,979 for 1930. This total represents a decrease of 32 per cent from the peak in 1929 and of 16 per cent from the average of the last five years (1926-1930).

Ford accounted for 40.2 per cent of the total against 33.8 per cent in 1929 while Chevrolet increased its percentage of total from 20.2 to 23.6. As a result, these two makes show losses of only 19 and 21 per cent respectively from their 1929 volume. The 1930 Ford and Chevrolet totals were 1,055,063 and 618,890 respectively.

Registrations of all makes except Ford showed a loss of 39 per cent from 1929 and of all makes except Ford and Chevrolet, a loss of 48 per cent. Austin, Essex, Plymouth, Pontiac, Willys and Whippet with total 1930 registrations of 252,069 sustained a loss of 58 per cent. The high-priced group consisting of Cadillac, Cord, Franklin, LaSalle, Lincoln, Packard, Pierce-Arrow and Stutz registered 73,012 cars, a drop of 34 per cent. The middle-price class, including all cars not already mentioned, had a registration total of 624,851, giving them a 42 per cent decline from the preceding year.

The following cars improved their sales rankings in 1930: Chrysler, Plymouth, De Soto, Lincoln, Buick, Cadillac, Oakland, Pontiac, Hupmobile, Packard, Reo, Studebaker and Willys. The following makes increased their percentages of total business as compared with 1929: Cord, Chrysler, Plymouth, Ford, Lincoln, Franklin, Buick, Cadillac, Chevrolet, Viking, Studebaker and Pierce-Arrow. General Motors got 34.5 per cent of total passenger car registrations as compared with 32.74 in 1929.

Commercial Credit (N. Y.) Reports 1930 Profits

NEW YORK, Feb. 10—Commercial Credit Corporation (New York), reports net income for 1930 after all charges of $268,723 as compared with $1,193,858 for the previous year. In the report, special attention is called to the fact that operations in Canada were unprofitable last year, and resulted in a considerable reduction in the profits derived from domestic operations.

LeBlond Has New Lathes

CINCINNATI, Feb. 10—A new line of lathes with 10-in. to 18-in. swings has been announced by the R. K. LeBlond Machine Tool Co. The line, known as the "Regal," is designed for use in general service shops, etc., and may be purchased on a deferred payment plan.

Thompson Opens Branch

CLEVELAND, Feb. 11—Thompson Products, Inc., announces the opening of a new branch office at 1739 McGee St., Kansas City, Mo. The branch will be in charge of George A. Magee.

Wisconsin Registrations Continue to Increase

MILWAUKEE, Feb. 9—Passenger car sales in Wisconsin are maintaining recent increases, judging by new car registration figures just released by the secretary of state. Registrations in January numbered 2900, compared with 2196 in December and 1548 in Nov., 1930, which was the low point. While in Jan., 1930, total new car registrations numbered 4415, the January gain this year over November and December is considered significant of a definite upturn in sales. Commercial car registrations in January numbered 658, compared with 887 in the same month last year.

Zenith Orders Increase

MILWAUKEE, Feb. 9—The Zenith Mfg. Corp., manufacturing replacement parts for Ford and Chevrolet cars, reports an increasingly active business. Orders for 50,000 cylinder heads and for 100,000 heaters have recently been booked. The foundry is adding a number of men and will increase the working force considerably more later in the year when an addition to the plant is completed. Work on the extension will begin about April 1. A. W. Sieglaff is president of the corporation.

Overseas Club to Meet

NEW YORK, Feb. 10—The Overseas Automotive Club will hold its February meeting on the 19th, one week later than the regular time, as the regular date, the second Thursday of the month, is a holiday. George Tiffany, sales manager of Overseas Motor Service, and first vice-president of the club, who has been spending several months in the far East, will be the speaker of the day.

D.A.C. Reports January Sales

DETROIT, Feb. 9—Gross sales of Detroit Aircraft Corp. products for the month of January totaled $78,000, according to Karl S. Betts, general sales manager. Lockheed and Ryan sales comprised the major part of this total.

Buick Deliveries Increase

DETROIT, Feb. 9—Actual deliveries of Buick cars for the entire country during the last 10 days of January jumped 74.8 per cent ahead of deliveries for the preceding 10 days, according to C. W. Churchill, general sales manager.

Steel Bar Prices Slated for Rise

Increased Orders Give Producers Confidence

NEW YORK, Feb. 11—Disclosing a gain of 188,755 tons, the leading steel producer's unfilled tonnage statement, issued at noon on Tuesday, was accepted by the steel market as a decidedly encouraging factor. It was pointed out that at the end of Jan., 1929, the corporation's unfilled tonnage aggregated 4,109,487 tons, so that the showing made by the latest report, as of Jan. 31, 1931, 4,132,351 tons, denotes an increase over the starting month of 1929, a year that, especially in the retrospect, is generally looked upon as having been a very fair year for the steel industry.

Rumors are current that the market leaders consider conditions as justifying another $1 per ton advance in the price of steel bars. It will be remembered that when the last upward revision of $1 per ton was made, it was intimated that the program called for gradually bringing the price of steel bars to a level more satisfactory to the producers and forecasting the advance which is now said to be impending. Demand for cold finished steel bars is well maintained in so far as it is reflected in shipments.

Broader activities in the market on the part of Detroit buyers is reported. One of the large "independent" producers of full-finished automobile sheets is said to have been so much encouraged by recent developments that resumption of activities at the company's Michigan plant, which has been idle for some time, is now being more seriously considered. Strip mills also are working on somewhat better schedules, although inquiry for cold rolled strip is still rather light.

Pig Iron—Automotive foundries have increased production and sales agencies report a numerical increase in shipping orders as well as a moderate gain in tonnage involved. The market holds steady.

Aluminum—Steady and unchanged.

Copper—Sentiment has turned more bullish. A resolution adopted by the Senate directing a Tariff Commission investigation of differences in copper production costs in this country and those in Canada, South America, and Africa, brings within the range of possibility adoption of a protective duty on raw and unmanufactured copper by the next Congress. Some American producers have heavy proprietary mining interests in Mexico and South America, but in the copper market the feeling prevails that a protective tariff on copper has now become a possibility to be figured with.

Tin—Quiet and firm. Straits tin was offered at 26½c at the beginning of the week.

Lead—A slightly better feeling prevails, but demand is still rather light.

Chrysler N. Y. Orders Up

NEW YORK, Feb. 10—Retail orders for Chrysler cars during January in the New York area amounted to 72 per cent more than in January a year ago, according to W. D. Stewart, vice-president of Simons-Stewart, Inc., Chrysler distributors. Retail deliveries increased 25 per cent and wholesale deliveries were up 40 per cent.

German Car Sales Figures Show Drop

October-December Period Brings Further Decline

PHILADELPHIA, Feb. 12—The sale of automobiles in Germany decreased further during the months October to December, according to an item in *Allgemeine Automobil Zeitung*. The decline, however, was essentially seasonal. The number of cars registered per business day in Germany during the past year were as follows:

	Passenger Cars	Trucks
January	162.2	39.6
February	207.9	44.1
March	327.8	56.3
April	432.4	68.8
May	443.4	84.7
June	358.3	63.0
July	279.8	57.1
August	259.6	54.5
September	227.2	50.7
October	188.6	46.2
November	150.8	40.6
December	115.0	38.0

Prices, which are on a very low level, did not yield materially during the past two months, but the buying public is demanding exaggerated concessions, especially as regards conditions of payment. From 18 to 24 months' time is often asked in the case of medium utility vehicles, and in the case of motorcycles, 15 months. The risks connected with such deals are a great burden to the trade. Collections remain unsatisfactory.

Sales of used cars are far more numerous than sales of new vehicles. Of 100 vehicles registered in November, 73 were used and 27 new.

Gemmer Reports Profit

DETROIT, Feb. 11—Gemmer Manufacturing Co. reports for year ended Dec. 31, 1930, net profit of $265,455, after charges and Federal taxes, equal after dividend requirements on Class A stock, to $1.45 a share on 100,000 shares of no par Class B stock outstanding; comparing with net profit of $527,976, or $4.07 a share, on Class B stock during the previous year. Current assets totaled $1,131,802 against current liabilities of $134,486, a ratio of 84 to 1. Cash amounted to $412,292.

Goodyear Salesmen Meet

CHICAGO, Feb. 9—The annual two-day conference of field representatives of the Goodyear Tire & Rubber Company, Inc., was held at the Congress Hotel last week under the direction of R. S. Wilson, vice-president and sales manager of the company. Salesmen from the Fargo, Minneapolis, Peoria, Milwaukee, Grand Rapids, Des Moines and Chicago branches attended the sessions.

W. L. Allen Resigns

CHICAGO, Feb. 9 — W. L. Allen, chairman of the board of Gleaner Combine Harvester Corp., has resigned following appointment of a receiver for that company.

G.M.Buys Aero Company

PITTSBURGH, PA., Feb. 11—Purchase of control of the Pittsburgh Metal Airplane Co. by the General Aviation Corp., a subsidiary of the General Motors Corp., was announced today by George R. Hann, president of the Pittsburgh Aviation Industries Corp., which established the metal airplane company here in 1928. The company, Mr. Hann said, would continue its experiments with metal planes.

British Gain N. Z. Outlet

LONDON, Jan. 31 (*by mail*)—Rootes, Ltd., world distributors of the Humber and Hillman cars and Commer trucks, announce today that Todd Motors Company, New Zealand, which in the past has handled only American products, has now decided to concentrate largely upon the marketing of Humber and Hillman cars throughout their eight branches and seventy dealer's organizations. Todd Motors Co. is the third important New Zealand firm of distributors to turn over to British cars since last December.

Philadelphia Section Meets

PHILADELPHIA, Feb. 12 — At the February meeting of the Philadelphia Section of the Society of Automotive Engineers, held last night at the rooms of the Philadelphia Automobile Trade Association, at which L. R. Buckendale of the Timken-Detroit Axle Co. spoke on the limitations imposed on truck and bus axle design by state laws, the chairman of the section was instructed to appoint a committee that is to take up with the parent society the question as to what steps it might be desirable to take to combat restrictive and conflicting legislation bearing on dimensions of commercial motor vehicles.

McCord Planes Share Reduction

CHICAGO, Feb. 9—Stockholders of McCord Radiator and Mfg. Co. at the annual meeting on Feb. 17 will be asked to approve a reduction in the authorized Class A stock to 28,400 shares from 50,000 shares and a decrease in the Class B issue to 303,400 shares from 325,000 shares. The last report showed that 27,925 shares of the senior issue were outstanding and that 172,410 shares of the B stock were issued.

British Austin Sales Gain

LONDON, Feb. 3 (*by mail*)—At a gathering of Austin dealers, Sir Herbert Austin said that sales of Austin cars during the three months ended Dec. 31 were 18.9 per cent higher than those for the same period in 1929.

Timken Axle Declares

DETROIT, Feb. 10—Timken-Detroit Axle Co. has declared regular quarterly dividend of $1.75 on preferred stock, payable March 2 to stock of record Feb. 20.

Veeder Reports Net 1930 Income

Dividends Exceed Profit Figure

HARTFORD, CONN., Feb. 9—Net income, before providing for federal taxes, for the year ending Jan. 3, 1931, for the Veeder Root Co. of this city, was $155,636 and the dividends paid totaled $188,750.

In a letter to the stockholders, John T. Chidsey, president, said that while the company was not immune from the general effects of the 1930 business depression, the sales of the company for December and January showed a substantial increase. Business on the company's books Feb. 1 of this year shows a 20 per cent gain over January and a 40 per cent increase over December.

The net profits from the 1930 operations were $139,485 as compared with $394,555 for the year previous. The officers of the company feel gratified with the signs of improvement. The 1930 business was about 33 per cent less than 1929.

Plan Aeronautic Meeting

BALTIMORE, MD., Feb. 10—Many technical papers on subjects dealing with aeronautics are to be presented at the Fifth National Technical Aeronautical Meeting, which is to be held in Baltimore from May 12 to 14. The Engineers Club of Baltimore and the Baltimore Section of the American Society of Mechanical Engineers will be the hosts.

The meeting is organized by the aeronautical division of the American Society of Mechanical Engineers. Orville Wright will be honorary chairman and Dr. Hugh H. Young, chairman of the Maryland Aviation Commission, will be chairman.

Cleveland Section Meets

CLEVELAND, Feb. 10—The Society of Automotive Engineers met at Cleveland Section, the Hotel Statler, on Monday, Feb. 9. The principal speaker was H. D. Hill, vice-president of the Hill Diesel Engine Co. who spoke on the subject "Diesel Engines for Automotive Service." A short talk was also given by Dale Brown, head of the Cleveland Better Business Bureau.

Ferdinand Jehle of the White Motor Co., headed a discussion of papers.

A committee was elected to nominate officers of the association to be voted on at a later date.

Watson to Participate

DETROIT, Feb. 10 — J. M. Watson, chief metallurgist, Hupp Motor Car Corp. and president of American Society of Steel Treating, will leave shortly for San Francisco to take part in the deliberations of the Western National Metal Congress, Feb. 16 to 20.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

NEW YORK, Feb. 11—Trade throughout the country last week was slow. Reports indicate that wholesale and jobbing lines made a better showing during January than retail trade. Caution is still apparent in most commercial centers, and salesmen throughout the country are not producing the results that were expected. The brisk demand for machine tools is one of the bright spots of current business reports. In some industrial sections business is showing very moderate but steady gains.

CAR LOADINGS

Railway freight loadings during the week ended Jan. 24 totaled 715,690 cars, which marks decreases of 146,656 cars below those during the preceding week, of 146,656 cars below those a year ago and of 210,784 cars below those two years ago.

POWER OUTPUT

Production of electric power by public utilities during 1930 amounted to 95,638,000,000 kw.-hr., which marks a decrease of 1.8 per cent below that in 1929.

LUMBER BUYING

Reports indicate an improvement in lumber buying of late. Statements from 821 leading hardwood and softwood mills show that orders received during the week ended Jan. 31 were 32 per cent above production, while shipments were 26 per cent above.

CRUDE OIL OUTPUT

Average daily crude oil production for the week ended Jan. 31 amounted to 2,085,950 barrels, as against 2,110,600 barrels for the preceding week and 2,595,000 barrels a year ago.

COAL PRODUCTION

Coal production during the week ended Jan. 24 declined. The output of bituminous totaled 8,859,000 tons, as against 11,703,000 tons a year ago, while that of anthracite amounted to 1,428,000 tons, as against 1,718,000 tons.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended Feb. 7 stood at 76.4 as against 77.2 the week before and 77.6 two weeks before.

Bank debits to individual accounts outside of New York City during the week ended Feb. 4 were 18 per cent below those in the corresponding period last year.

STOCK MARKET

The stock market last week was dull and irregular, with prices as a whole developing no particular trend. Besides other bearish factors, the poor showing made by business firms in their income reports for the last quarter of 1930 had a depressing influence on the market. Trading was on a small scale; and, while net changes for the week were irregular, there were more moderate net gains than losses.

BROKERS' LOANS

Brokers' loans in New York City during the week ended Feb. 4 decreased $18,000,000, bringing the total down to $1,716,000,000, as against $6,804,000,000 on Oct. 2, 1929.

RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended Feb. 4 showed an increase of $8,000,000 in holdings of discounted bills, and a decrease of $16,000,000 in holdings of bills bought in the open market. Holdings of Government securities remained unchanged. The reserve ratio on Feb. 4 was 82.9 percent, as against 82.7 per cent a week earlier and 81.2 per cent two weeks earlier.

Federal Mogul Reports Profit

DETROIT, Feb. 9—Federal Mogul Corp. has reported for year ended Dec. 31, 1930, net profit of $84,452 after all charges and Federal taxes, equal to 54 cents a share on 154,720 shares of no par common stock outstanding, compared with net profit of $305,765 or $2.35 a share, on 130,000 shares of common in 1929. At the annual meeting of stockholders, directors and officers were reelected.

Plan Instrument Making

LA CROSSE, WIS., Feb. 9—A group of former executives of the National Gauge & Equipment Co., now the LaCrosse division of the Motometer Gauge & Equipment Co., have organized the General Instrument Co. of LaCrosse and will get into production on a line of motor vehicle and instrument equipment by March 1. The concern is capitalized for $50,000.

L. W. Corey, formerly assistant manager of National, is president; H. T. Owens, formerly Eastern representative, is vice-president; R. L. Corey, formerly sales manager, is treasurer, and A. H. Zischke, formerly sales manager of the LaCrosse division, is secretary and manager. An existing building at the foot of Market Street has been leased and is now being equipped. The line of products will include oil gages, gasoline gages, heat indicators, etc., with an industrial line of thermometers and pressure gages.

Allis Reports Profit

CHICAGO, Feb. 9—Allis-Chalmers Mfg. Co., for the year ended Dec. 31, 1930, reports a net income of $3,604,609 after depreciation, Federal taxes and all other charges, equal to $2.86 a share on 1,258,400 shares of common stock. These earnings were the second largest for any year in the last eleven, being exceeded only in 1929 when the net was $4,330,888, or $3.81 a share.

Net profit for the final quarter was $570,087, equivalent to 45 cents a share, as against $682,982, or 54 cents a share in the preceding three-month period, and $951,548, or 83 cents a share in the last quarter of 1929. Orders booked in 1930 totaled $41,606,196, as compared with $48,493,817 in the preceding year. Unfilled orders Feb. 1 amounted to $12,136,000, a decrease of $866,000 from the total reported Jan. 1.

Christian Jensen

RACINE, WIS., Feb. 9—Christian Jensen, vice-president and general superintendent, Harvey Spring & Forging Co., Racine, Wis., and widely known among automotive parts executives, died Feb. 2 at St. Luke's Hospital in Racine. He was 65 years of age and a native of Denmark.

Montague Napier, Pioneer, Dies

His Firm Began Car Output Early in Century

PHILADELPHIA, Feb. 10—Announcement comes from England of the death, on Jan. 23, at Cannes, France, of Montague Stanley Napier, chairman of D. Napier & Sons of Acton, Vale. Mr. Napier, who was only 60 years old, had been an invalid for many years. The Napier firm originally was engaged in the marine engineering field and during the latter part of the nineteenth century its works were transferred from the Clyde to Acton. Early during the present century the manufacture of motor cars was taken up. The firm pioneered the six-cylinder engine for passenger cars. A Napier car in 1902 won the Gordon Bennett race in France.

During the war Napiers took up the manufacture of airplane engines, producing a 12-cylinder water-cooled type with the cylinders arranged in three banks of four each. A Napier aircraft engine was fitted to the British winner of the Schneider Cup race in 1927 as well as the Bluebird automobile racer with which Malcolm Campbell set a new world's speed record at Daytona last week.

Blees Sees 9,000,000 Sold in Two Years

ST. LOUIS, Feb. 8—That the automobile industry will have to meet a demand for at least 9,000,000 cars in the next two years is a conservative estimate in the opinion of W. A. Blees, vice-president in charge of sales of the Oakland Motor Car Co.

Mr. Blees, while attending the St. Louis Automobile Show, said: "There are now in the United States 7,500,000 cars that are more than six years old. It is costing most of their owners more to operate these old vehicles than it would cost them to buy new ones. These cars must be replaced in the next two years. It is also safe to estimate on an export business of 500,000 cars a year, and new buyers will purchase about 250,000 a year. The output this year should be about 4,000,000 cars."

To Study Aero Mufflers

WASHINGTON, Feb. 9—A study of engine mufflers as a means of reducing airplane engine exhaust noises has been undertaken by the aeronautics branch of the Department of Commerce as a part of its investigation of the reduction of airplane noises, Harry H. Blee, director of aeronautic development of the aeronautics branch, announced today. This study will be conducted by the aeronautics branch through its research division at the Bureau of Standards.

Wayne Registrations Decrease Slightly

Loss by Ford More Than Other Drop

DETROIT, Feb. 9—New passenger car registrations in Wayne County during January totaled 2365, a decrease of 180 from December. Decreased Ford registrations more than accounted for this drop, Ford registering 940 as against 1136 in December and 2201 in January, 1930.

As compared with January, 1930, registrations, Auburn, Pontiac, Buick, Cadillac and Lincoln showed increases, Auburn taking seventh place for the month. Chevrolet registered 501 cars as against 599 in December and 521 the preceding January.

As compared with December registrations, Dodge, Graham, Lincoln, Oakland, Oldsmobile, Packard, Pontiac and Studebaker showed increases in registrations, Oldsmobile registering 107 cars against 25 in December. Third place in Wayne County registrations was taken by Pontiac with 112 cars registered in January. Oldsmobile was fourth.

The sharp decline in commercial car registrations for January from December, 257 against 419, was virtually accounted for by decreases in Ford truck registrations, the January Ford total being 163 as against 314 in December. Chevrolet registered 43 in January as against 47 in December.

Shear Makers Incorporate

MILWAUKEE, Feb. 9—The business of Doelger & Kirsten, 3015 Chambers St., a leading manufacturer of alligator shears, has been incorporated as Doelger & Kirsten, Inc., with a capitalization of 5000 common shares without par value. Charles H. Doelger, who with Oscar Kirsten founded the business many years ago, died a year ago and the interest in the partnership was acquired by Mr. Kirsten a short time ago. His son, William C. Kirsten, is also a principal in the new corporation.

Olds Sales Increase

LANSING, Feb. 14—More than five times as many Oldsmobiles were sold in January than in December, report officials of Olds Motor Works. This improved consumer buying is widespread with every section of the country represented, it was said. As a result of this increase, the February production, which was raised 30 per cent above schedule, has been jumped to 50 per cent.

Fisk Reduces Schedule

CHICOPEE FALLS, MASS., Feb. 9—Fisk Rubber Co. has reduced its operating time from five to four days a week and will close its plant Feb. 23 for one week. Delayed buying is given as the reason.

+ + CALENDAR + + OF COMING EVENTS

SHOWS

Copenhagen, Automobile .....Feb. 8-15
Denver, Automobile .....Feb. 9-14
Grand Rapids, Automobile .....Feb. 9-14
St. Petersburg, Fla., Automobile.Feb. 9-14
Toledo, Automobile .....Feb. 9-14
Wichita, Kan., Automobile .....Feb. 9-14
Mankato, Minn., Automobile...Feb. 11-14
Peoria, Ill., Automobile.....Feb. 11-15
Rapid City, S. D., Automobile..Feb. 12-16
Indianapolis, Ind., Automobile..Feb. 14-19
Providence, R. I., Automobile...Feb. 14-21
Sacramento, Automobile .....Feb. 16-19
Berlin, Automobile.....Feb. 19-March 1
Quebec, Automobile .....Feb. 21-28
Memphis, Automobile .....Feb. 23-28
Des Moines, Automobile .....Feb. 23-28
Seattle, Wash., Automobile, Feb. 24-Mar. 1
Camden, N. J., Automobile, Feb. 25-March 2
Geneva, Automobile .....March 6-15
Los Angeles (Transportation).March 15-28
Altoona, Pa., Automobile.....April 15-27
International Garage Exposition, Berlin, Germany .....May 9-Aug. 9

CONVENTIONS

American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.....Feb. 16-19
Society for Steel Treating (National Western Metal and Machinery Exposition), San Francisco.Feb. 16-20
Southern Automotive Jobbers Association, Atlanta .....Feb. 19-21
Road Show and School, Wichita, Feb. 24-27
American Chemical Society, Indianapolis, Ind. .....March 30-April 4
Aeronautical Chamber of Commerce, Detroit .....April 11-19
U. S. Chamber of Commerce, Atlantic City .....April 28-May 1
International Chamber of Commerce, Washington, D. C. .....May 4-9
National Foreign Trade Council, New York .....May 27-29
Fourth National Oil and Gas Power Meeting, A.S.M.E., Madison, Wis., June 15-18

SALONS

Los Angeles, Calif., Biltmore Hotel, Feb. 7-14
San Francisco, Calif., Palace Hotel, Feb. 21-28

Discontinues Heavy Machines

MILWAUKEE, Feb. 9—The Kempsmith Mfg. Co., manufacturing milling machines, has disposed of its heavy duty line of machines to Jos. T. Ryerson & Son, Inc., Chicago, and henceforth will concentrate its attention upon the light and medium-weight lines, its original products more than fifty years ago.

Auburn Adds 106 Dealers

AUBURN, IND., Feb. 9—Auburn has added 106 new dealers and distributors since Jan. 3, N. E. McDarby, vice-president in charge of sales for the company, announced today. Applications for franchises are coming in at the rate of around ten daily, the Auburn official said.

January Ford Output is 55,182

DETROIT, Feb. 9—Ford Motor Co. has reported world production for January of 55,182.

Martin Output Begins at M. P. Moller Plant

Small Car to Be in Dealers' Hands Soon

WASHINGTON, Feb. 12 — Martin cars now are in limited production at the plant of the M. P. Moller Motor Car Co., Hagerstown, Md., and will be placed on display at dealers during the first week of March, according to President J. W. Bryan of the Martin Motors, Inc. Mr. Bryan told *Automotive Industries* that the company is calling the cars the "Victory Line" of Martin Motors, Inc., and that the first units to be shown will be the standard coupe, to be sold at $250, f.o.b. Hagerstown; the de luxe convertible coupe to be sold at $350, f.o.b. Hagerstown, and a commercial job, a truck, to be known as the Victory Express. This job will be a ¼-ton truck with 34 cu. ft. carrying capacity. The price has not been definitely determined, except that it will be less than $400.

The cars and the truck will be shipped to dealers as fast as they are produced but it will not be possible to supply all of the 1500 dealers during the first week of March. It is expected that production early that month will reach approximately 100 units a week and that full production of 300 cars will be reached about Aug. 1.

At present, Mr. Bryan said, the company is tooling its plant and is making satisfactory progress.

Kansas City Show Opens

KANSAS CITY, Feb. 9—The 25th Annual Automobile Show of the Kansas City Motor Car Dealers Association opened at the American Royal Building here last night in a brilliant setting and to a record crowd. More than 300 passenger cars and about 100 commercial cars are on display along with hundreds of exhibits of accessories and shop equipment. The show is being staged as a silver jubilee event.

Plan Plane Rental

CHICAGO, Feb. 9—Two plane manufacturing companies, perhaps a third, are working out plans to furnish flying equipment to operators on a rental basis, similar to the system used by the Pullman Co. The talk of this system has resulted in a favorable reaction by the operators. They would be able to requisition planes at the manufacturers' hangars, where the ships would be serviced and ready for use.

William E. Wright

SPRINGFIELD, MASS., Feb. 9—William E. Wright, for 14 years general manager of the old Knox Automobile Co. of this city, and a director in many business organizations, died here Feb. 4 at the age of 80 years.